

City of Boroondara

**Boroondara Bicycle
Strategy**

10 Year Bicycle Strategy

ISSUE

City of Boroondara

Boroondara Bicycle Strategy

10 Year Bicycle Strategy

September 2008

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It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party

Job number 086215-00

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Executive Summary

Arup, in conjunction with Design Cycle, were appointed by the City of Boroondara in February 2007 to develop a Bicycle Strategy with a ten year time frame. The overarching goal of the Strategy is to increase the number of cyclists using Boroondara's bicycle network and facilities. The Strategy was developed from an existing conditions review, consultations with stakeholders and the community and site surveys.

Network Overview

The existing bicycle network in Boroondara is extensive and plays a central role in the wider Melbourne network. Boroondara comprises a total of 32kms of formal shared paths across an array of major trails, including the Gardiners Creek, Anniversary, Main Yarra and Koonung trails. Council is responsible for the off-road shared path network.

Boroondara also accommodates 56kms of formal on-road cycle paths, located on both arterial and local roads. VicRoads is responsible for the PBN (Principle Bicycle Network) on the declared road network and is the approval mechanism for PBN treatments on the arterial road network. Council is responsible for the PBN on Council owned roads.

Catering for All

It is recognised that the users of the network (both cyclists and pedestrians) will have different predominant needs. The following table summarises the predominant need of each broad group considered within the Strategy development.

Group	Overarching Needs
Competitive Cyclists	On-road consideration in road design. Safe training routes.
Recreational Cyclists	On and Off road infrastructure dependent of level of cyclists. Signs to amenities and transport opportunities. Supporting facilities including water fountains, cycle parking, toilets and picnic facilities.
Commuter Cyclists	On and Off road infrastructure dependent of level of cyclists. Direct connections from residential areas to employment centres. Good trip end facilities at place of work.
Tourism Cyclists	On and off road infrastructure with clear legible routes and signage to amenities and tourism attractions. Good and easily accessible information. Supporting facilities including water fountains, cycle parking, toilets, picnic facilities and cycle shops/hire.
Novice Cyclists	Off road cycling opportunities with safe negotiation of conflict locations with vehicles. Access to safe cycling information. Supporting facilities including water fountains, cycle parking.
Utility Cyclists	On and Off road infrastructure with clear legible routes and signage to activity centres, shopping strips, educational facilities, community and recreation centres. Supporting facilities include cycle parking.
Pedestrians	Shared off road pathways that provide segregation from cyclists on busier routes. Direct connections from residential areas to local facilities. Will often be walkers with dogs or prams, or elderly persons; and will therefore require well maintained paths.

The competing needs of all on-road and off-road users are recognised and form the basis for the development of the Strategy.

Infrastructure

As highlighted by the Strategy, the highest infrastructure priority is the review of safety issues and particular high risk locations on the off-road network. The following recommendations outline the locations and issues of highest priority:

- Safety issues along the Anniversary Trail including dangerous crossings, pinch points and bollards (Items 3, 22, 23, 24, 33, 53 and 56 as shown in **Figure 9**);
- Kew Junction requires a retrofit to accommodate safe bicycle movements (site of the only cycling fatality over the past 5 years at High Street and Cotham Road) (Item 65);
- Safety Audit of crash locations highlighted under Section 4.4 of the report; and
- Bottle neck and conflict with pedestrians at Glenferrie Road and the City Link Overbridge (Item 4).

Gaps in infrastructure also form a high infrastructure priority. Cycling counts indicate that off-road cycling routes attract much higher numbers of cyclists than on-road routes. Furthermore, off road routes tend to attract novice cyclists, and may therefore encourage more people to ride. Accordingly, off-road infrastructure has been prioritised under the Strategy as this provides the greatest potential to attract new cyclists. High priority recommendations include:



- Completing the gap in the Gardiners Creek Trail between Warrigal Road and the Solway Street Bridge (Item 21);
- Linking the Darebin Creek Trail and the Main Yarra Trail (Item 17);
- Completing the gap in the Anniversary Trail at Camberwell High School, addressing the high accident rate along Riversdale Road, and improving the poor wayfinding along this section of the Anniversary Trail (Items 1 and 5); and
- Alternative arrangement to Chandler Steps (Item 25) where the Chandler Highway meets Yarra Bend Park and the Main Yarra Trail.

A high priority recommendation on the on-road network is to close the gap along Balwyn Road between Whitehorse Road and Canterbury Road to service schools, link with rail transport opportunities and the Anniversary Trail (Item 63).

An East-West route is highly recommended in order to fill a gap in the network between the Main Yarra Trail and the Anniversary/Outer Circle Trail. Three routes are outlined under Items 54, 59 and 64; these are illustrated on **Figure 9**. All routes are highlighted as a medium priority under the draft Strategy report. It is recommended that the 3 corridors are subjected to a detailed investigation with aim to highlight a preferred route for development.

Running along Wellington St and Sackville St, Kew, Item 54 comprises of an on-road, off-road and shared carriageway route past a number of high schools linking with Mont Albert Road. Item 64 follows the rail line serving Swinburne University. Item 59 is generally an on-road shared carriageway route through residential areas with many pedestrian crossing facilities already in place.

Supporting Infrastructure

It is essential that supporting infrastructure is provided to encourage the use of on and off road cycling networks, which can include providing end-of-trip facilities, better wayfinding signage, a single naming convention of routes, and lighting.

Adequate trip end facilities should also be available for cyclists at their destinations. The lack of trip end facilities, in particular secure bicycle parking is a key barrier to cycling. It is recommended that bicycle parking provisions are improved.

Schools and universities that wish to encourage sustainable transport should also be encouraged to introduce high quality bicycle parking with shelters on campuses. Sports grounds and parks should also be targeted for bicycle parking facilities through Council and liaison with Parks Victoria and SRV (Sports & Recreation Victoria). Bicycle parking facilities at railway stations often lack shelter and are located at the end of platforms. Sheltered bicycle parking facilities located at station entrances are preferred and demonstrate higher utilisation rates. Bicycle parking audits would identify where parking facilities are lacking or where provision is inadequate. The audits may also serve as a means to monitor cycling growth and the success of measures instigated.

Greater signage is required to indicate the location of off-road trails and on-road routes. Wayfinding was identified as poor at a number of locations, including Camberwell High School (Item 1 and 5), Burwood Road and the Main Yarra Trail (Item 13).

Informal on-road routes are currently difficult to follow and may require frequent orientation with a map, particularly for those not familiar with the area. Two on-road shared routes are outlined under Item 59 and 62, which have been assigned a medium priority. Low cost way-markers would improve the legibility of routes particularly along local streets. Cost effective self adhesive markers are recommended as they provide improved route legibility and promote the cycle route to all road users. Signs should also be placed to indicate to drivers the presence of cyclists and to advertise the route to all road users.

The use of information boards and maps are also recommended at key bicycle cross-roads, railway stations and universities to inform users and to serve to advertise the immediate cycling environment to potential users.

It is important that paths are given a single name along for ease of navigation. A single naming convention for the Anniversary Trail and the Outer Circle Trail is highly recommended.

Lighting is seen as a significant constraint by commuting cyclists. It is recommended that lighting is introduced, particularly at regular intervals along the Gardiners Creek Trail and the Main Yarra Trail. Night audits are recommended to identify areas that may expose cyclists to greater risk of personal safety and security.

Maintenance & Auditing

Maintenance is carried out by Council as part of the safety audit implementation budget where funding is allocated to cover a broad range of issues. The audits are carried out every 2-3 years and provide an important proactive instrument in identifying the maintenance requirements of the existing off-road network and safety issues.

Audits undertaken along four trails (Anniversary Trail, Main Yarra Trail, Gardiners Trail and Koonung Trail) identify maintenance requirements that are higher than current budget provisions. It is recommended that cycle route maintenance be given greater consideration in Council's budget process as it is



evident from surveys that cycle corridors provide an important recreational and commuter function and active form of travel.

Education and Promotion

Promoting cycling is integral to raising community awareness of cycling, its benefits and improving the perception of cycling in general.

The highest education and promotion recommendation is the establishment of a marketing program. This recommendation is primarily aimed at encouraging high school and university students to cycle; however, the recommendation is also inclusive of major local employers in the City of Boroondara. It is recommended that a marketing program be aligned with the TravelSmart program which seeks to reduce reliance on cars and increase the use of more sustainable forms of transport, including cycling.

Currently, there is limited reference to cycling on Council's website. A Council webpage providing a one-stop shop for cycling in Boroondara for residents, schools and employees with links to Bicycle Victoria and VicRoads, is recommended. This would also form an important tool for the marketing program.

Bicycle awareness and educational programs targeting all road users that also encourage people to cycle are considered a high priority. It is recommended that Council promote new cycle routes, cycling events and new funding and success stories surrounding increased ridership and at the same time promote the health, economic and environmental benefits of cycling.

Monitoring and Targets

Monitoring provides a powerful tool that measures the success of cycling infrastructure, providing grounds for future funding and further improvements. It is recommended that annual bicycle counts continue to be undertaken by Council, as well as bicycle parking counts and crash assessments. The monitoring program should include a list of annual targets to identify whether or not the municipality is meeting Strategy objectives in relation to increasing cycling activity in the City. It is recommended that monitoring be undertaken in consultation with VicRoads and Bicycle Victoria.

A five year review of the strategy is recommended to monitor progress, incorporate updates and refine the strategy accordingly.

1 Introduction

Arup, in conjunction with Design Cycle, was appointed by the City of Boroondara in February 2007 to develop a Bicycle Strategy with a ten year timeframe. The objective of the Strategy is to provide a list of recommended actions that will drive the development, improvement, and expansion of Boroondara's bicycle network.

This report summarises the background work undertaken in the preparation of the Strategy before identifying the good practice/ state of the art requirements for cyclists. The proposals for new physical infrastructure are identified, along with the supporting educational and promotional strategies and potential funding sources.

1.1 Background

The development of the Boroondara Bicycle Strategy involved six stages:

- Stage One: Inception;
- Stage Two: Existing Conditions Review;
- Stage Three: Consultation;
- Stage Four: Draft Strategy;
- Stage Five: Public Exhibition;
- Stage Six: Revised Draft Strategy;
- Stage Seven: Further Consultation; and
- Stage Eight: Final Strategy.

In developing the Strategy, Arup completed an Existing Conditions Report which is attached in **Appendix A** of this report. The Existing Conditions Report outlines the background work undertaken in preparation of the Strategy, including a review of all the existing documentation relevant to bicycle infrastructure and planning and a study of the primary on and off road cycling network. In addition, the 1996 Draft Bicycle Strategy was reviewed with all outstanding proposals considered for appropriateness given recent developments. An analysis of crashes involving bicycles within the municipality in the last five years was also undertaken using VicRoads CrashStats data.

Stage Three of the study involved an extensive consultation process with members of the local community, Council officers and key stakeholders including presentations and workshops during April – May 2007.

Following the completion of Stage Three, the opportunities and constraints regarding bicycle facilities were identified, and a review of best practice and state of the art bicycle paths and facilities was undertaken to develop a detailed draft Strategy.

This final report summarises the steps taken in developing the Strategy, and will list the social and physical infrastructure recommendations, together with supporting documentation such as funding and education opportunities. The recommendations have been prioritised and included within a ten year works program.

2 Overall Goal and Guiding Principles

The overall goal and associated guiding principles form the foundations for driving the Strategy. These were developed during the existing conditions review and consultation process, and are outlined below.

2.1 Overall Goal

The overall goal is as follows:

“The overarching goal of the Strategy is to increase the number of cyclists using Boroondara’s bicycle network and facilities”

There are wide ranging and inter-related benefits attached to an increase in cycling. An increase in cycling will result in health related benefits to the community through increased exercise. It is also a sustainable form of transport and can reduce greenhouse gas emissions if car trips are replaced by bicycle trips.

While the Strategy aims to encourage existing cyclists to cycle more often, it is also intended to increase the actual numbers of cyclists, particularly amongst the less frequent demographic cycle groups such as women, school children and senior citizens.

Although attracting new cyclists to the bicycle network will be at the forefront of the Strategy, the ambition of sustaining the new recruits will also be a significant challenge. The standard of journey with respect to safety, amenity and connectivity experienced by all users of the Boroondara bicycle network will be a significant factor in maintaining and enhancing the levels of usage, and in shaping the future of the network.

This key goal will be supported by a set of guiding principles. The principles encompass infrastructure enhancement and expansion, the improvement of safety for all users, and the continued development of Boroondara’s bicycle network.

2.2 Guiding Principles

The guiding principles have been categorised into three key areas; Infrastructure, Safety and Development.

2.2.1 Physical and Social Infrastructure

Physical infrastructure influences every aspect of a cyclist’s journey; including the quality of the path and route that they cycle upon, wayfinding and signage, facilities en route, parking, and end of trip facilities including changing rooms, showers, and lockers.

The Strategy will aim to provide a bicycle network that offers both comprehensive and high quality physical infrastructure, providing inclusive connectivity to the key activity centres and attractors. This will be achieved through adopting the following key principles:

- Legible, direct and accessible routes/paths, through improving the coverage, continuity and quality of the cycling network including signage and surface markings;
- Maintenance/improvement of existing paths and facilities; and
- Reallocation of road space.

Given limitations in road space, the competing needs of all road users were considered throughout the development of this Strategy.

The design, introduction and development of the social infrastructure should be approached with a view to achieving a cohesive integration with the physical infrastructure.

The focus of the social infrastructure will be to recruit and sustain cyclists. The following principles will mould the social infrastructure:

- Targeted behavioural change programs (e.g. ride to work, Travel Smart, ride to school, Get2School Cool Challenge, ride to shops, seniors riding);
- Information (maps, websites, leaflets, etc);
- Policies (Integrated Transport Strategy, other Council policies, integration with State and Federal Government); and
- On-going research and review.

2.2.2 Safety

Improving the safety of Boroondara's cycling network is critical; in addition to reducing the number and severity of crashes relating to cyclists, a safer bicycle network will also attract additional patronage and will enhance public perception of cycling in general.

The following principles will be adopted to enhance safety for users of the bicycle network:

- Targeted infrastructure improvements at crash locations and potentially unsafe sites;
- Infrastructure improvements to address ageing infrastructure and compliance with current standards;
- Encourage consideration towards cycling in all infrastructure design;
- Education initiatives within schools, workplaces and within the residential community;
- Encourage casual surveillance and actual/perceived security through increased use of cycle routes; and
- Wayfinding including surface markings and signage.

2.2.3 Continued Development

The future of cycling in Boroondara will be influenced by the actions that are recommended within the Strategy's ten year timeframe.

It is essential that the Strategy looks beyond the immediate requirements of Boroondara's bicycle network, and gives consideration to the long-term implications of each action.

The following principles will shape the long-term goals of the Strategy:

- Ensure planning for cycling is integrated within overall transport and land use planning;
- Encourage consideration towards cycling in all infrastructure design and look for opportunities to improve facilities or to extend the bicycle network;
- Monitor bicycling volumes;
- Expand and improve the continuity and legibility of existing and future bicycle corridors;
- Improve integration and facilities at key trip attractors and between adjacent municipalities;
- Co-ordinate the provision of bicycling facilities across relevant agencies and organisations;
- Facilitate ongoing research and investigation of new initiatives; and
- Undertake audits of facilities and develop remedial action plans.

3 Strategic Context

3.1 Documentation Review

The documentation review was undertaken as part of the Existing Conditions Report, and outlines the relevant strategies at federal, state and local level. This section provided the context for the development of the Bicycle Strategy.

The review highlighted a number of key points and issues presented within each document, and the most relevant are summarised below:

3.1.1 Cycle Connect

The Cycle Connect initiative was part of the Australian Government's "Sustainable Cities" urban environment program. Cycle Connect ended in 2005-2006, having run for two years. During this time, the project provided approximately 3,000 secure bicycle lockers nationwide, and was of particular benefit to commuters who profited from the introduction of bicycle lockers at suburban bus and train stations.

Although now concluded, the success of Cycle Connect may encourage repetition of the initiative.

3.1.2 Melbourne 2030

'Melbourne 2030' is the metropolitan land use and transport Strategy for Melbourne. It is the Victorian State Government's strategic plan prepared to manage growth and change across the metropolitan area until 2030.

Melbourne 2030 emphasises the need to protect the liveability of established areas and to increasingly concentrate change in strategic redevelopment sites in 'Activity Centres' and underdeveloped land. There is a strong emphasis on promoting sustainable travel modes including increasing cycle provision, where key objectives are to:

- Reduce the number of private motorised vehicle trips by concentrating activities that generate high numbers of (non-freight) trips in highly accessible locations; and to
- Improve access by walking, cycling and public transport to services and facilities for local and regional populations.

Within the City of Boroondara, Camberwell Junction is one of Melbourne's 25 Principal Activity Centres, while Kew Junction and Glenferrie Road Hawthorn are Major Activity Centres.

Furthermore, policy 8.7 of Melbourne 2030 concerns the need to give greater priority to cycling and walking. Initiatives 8.7.1 – 8.7.5 relate specifically to cycling, and are summarised as follows:

- Continue to develop the Principal Bicycle network (PBN) – to be completed, resources permitting, by 2015 – and give more priority to sections that link with activity centres;
- Implement a walking action plan for the whole of Victoria that includes provision for footpath bound vehicles such as wheelchairs, prams and scooters;
- Amend planning and/ or building controls so that end of trip facilities for bicycles are provided in commercial buildings;
- Provide improved facilities, particularly storage, for cyclists at public transport interchanges and rail stations; and
- Develop a bicycle action plan which brings together all elements needed to substantially increase bicycle use.

Furthermore, Melbourne 2030 highlights the need to change travel behaviour through the promotion of more sustainable modes. An emphasis is placed on the promotion of non-motorised travel for short trips, and public transport for longer trips. The development and implementation of programs to achieve this should focus on raising awareness of alternative means of travel, essentially motivating people to use them.

3.1.3 Arrive Alive! Road Safety Strategy 2002-2007

The Arrive Alive! Road Safety Strategy for 2002-07 is a State government initiative, developed by the road safety partners and currently being co-ordinated by VicRoads. The Strategy aims to improve road safety through tackling 17 key issues, including road design, speeding, drink-driving, fatigue and vehicle safety.

Initiatives regarding cyclists include improved enforcement of helmet wearing, education through the Bike Ed program and improved infrastructure.

3.1.4 TravelSmart Local Government Grants Program

The TravelSmart Local Government Grants Program (LGGP) is a three year travel change behaviour program which offers funding to Councils for community and cooperate education programs that seek to reduce the number of car trips made and increase sustainable transport use. This incorporates cycling as well as walking and public transport.

Boroondara was successful in Round One of the 2006-2007 funding, securing funding for one project; Transport, Swinburne and Corporate Boroondara.

Following rounds of funding for TravelSmart are continuing to be announced in addition to the funding for the complementary Local Area Access Program (LAAP). Funding through the LAAP will be awarded to the projects that demonstrate an integrated approach to improving access within local areas, with emphasis placed on walking and cycling.

3.1.5 Boroondara Integrated Transport Strategy

The ITS outlines the existing and proposed cycling network in Boroondara and discusses the key issues that need to be overcome in order to achieve an increase in the proportion of people cycling in Boroondara.

An action plan was formed which identifies an array of actions for achieving improved transport and access in Boroondara. Section 5 of the ITS lists actions specific to cycling, separated into short, medium and long term objectives, and is summarised below:

Short term Objectives

- Develop and adopt a Boroondara Bicycle Strategy (5.1)

It was advised that the Strategy consider local and regional routes, on and off-road, and include an action plan for further works.

- Develop and display a Cycle Map (5.2)

A user-friendly map to include all on and off road paths and cycling facilities are to be updated when changes are made. To be distributed to Boroondara residents and made available on-line.

- Investigate Cyclist Crash Locations for Improved Safety (5.6)

Identify cyclist crash locations and develop measures to improve safety, applying for blackspot funding where appropriate.

Assess and examine the Kew Junction Precinct (an intersection with a high crash rate).

- Improve Maintenance of Cycling and Pedestrian Infrastructure (5.8)

It is recommended that a review of the council's footpath maintenance program be undertaken to ensure that the poor condition of a pathway does not deter people from walking/cycling.

- Ensure LATMs cater adequately for Cyclists (5.9)

Implement procedures to ensure that the preparation of LATMs are designed with due consideration given the needs of cyclists.

- Introduce Shared Path Centre Line Marking and User Conduct (5.11)

It was recommended that centre line marking and signage be introduced on all shared pathways to reduce conflicts between cyclists and pedestrians, and to increase the awareness of users of the shared pathways.

- Increase Bicycle Ed Provision (5.13)

This recommendation aims to encourage working with local primary schools to ensure that bicycle education (Bicycle Ed) is part of the curriculum. This could be achieved through a co-ordinated approach with Bicycle Victoria and BBUG (Boroondara Bicycle Users' Group).

- Explore Viability of Bicycles on Trams (5.15)

The Strategy proposes to initiate a discussion to evaluate the viability of allowing bicycles to be carried on trams in off peak periods. However, this proposal has since been ruled out by Yarra Trams.

Short-Medium term Objectives

- Develop Priorities for Off Road Path Development (5.10)

Assess and prioritise the outstanding treatments from audits of the shared path network (Anniversary Trail, Gardiner's Creek Trail, Main Yarra Trail and Koonung Trail). Typical actions include pathway widening, linemarking, signage installation and routine maintenance.

- Improve Bicycle End of Trip Facilities (5.14)

A proposed assessment of facilities such as bicycle racks, showers and storage at all Council run/owned facilities (parks, ovals, libraries etc), and at shopping centres. Consideration to be given to increasing the existing level of provision.

Medium term Objectives

- Review Cycle and Pedestrian Routes across the Monash and Eastern Freeways (5.16)

The ITS advised Council to undertake investigations as to how these routes should be improved/introduced, particularly to access railway stations on the Glen Waverley line.

Ongoing Objectives

- Promote and Encourage Cycling (5.3)

Provide support and build strong working relationships with Bicycle Victoria and BBUG, and to assist promotion and support bicycle education programs in schools and organisations.

- Regional Bicycle Routes (5.4)

To improve bicycle connections with surrounding municipalities and continue the implementation of the Principle Bicycle network (PBN). Investigate and develop additional on & off road bicycle routes.

- Investigate Measures to Improve Intersection Safety for Cyclists (5.7)

To extend on-road bicycle lane provision to intersections and, where possible, introduce 'Head Start' storage boxes for cyclists (advance stop lines in from of stoped vehicles at traffic signal intersections).

- Consider Lighting shared paths used by Commuters (5.12)

The cost of light installation on the shared paths that are heavily used by commuters should be investigated.

Long Term Objectives

- Develop Local Cycle Routes (5.5)

Develop routes on local roads to complement the existing and PBN shared paths, to provide good, direct connectivity between schools, universities and activity centres, and to offer a safer alternative to arterial road routes.

A summary of all documents reviewed is included in full in the attached Existing Conditions Report (**Appendix A**).

3.1.6 Boroondara Road Safety Strategy

Boroondara adopted its updated 2007-2012 Road Safety Strategy in mid 2008. This Strategy will guide current and future road safety initiatives in the City, and will be used to assist Council in coordinating its road safety efforts more closely with those of the Police, VicRoads, other government agencies, school and community groups and road user groups.

The Road Safety Strategy contains analysis of road crash statistics from VicRoads CrashStats database for the five year period 2001 to 2005. Upon review of previous data, there have been significant improvements relating to many areas of road crash statistics. However, despite improvements, casualty crash figures are still significant and Council should continue to target and implement relevant road safety improvement programs. This is particularly important in relation to cyclists as according to the Strategy, Boroondara is ranked 1st highest of the 16 municipalities in the Melbourne south east metropolitan area for cyclist fatalities and serious injuries.

4 Existing Conditions

This section provides a summary of the Existing Conditions Report, detailing the key conclusions and aspects of each element considered within Stage Two of the study.

4.1 Land Use

The City of Boroondara covers an area of 60 sq/ km across Melbourne's inner and middle-eastern suburbs, and is located approximately 5km east of the Central Business District.

As shown on **Figure 1** below, the municipality is bounded by the following:

- The Eastern Freeway to the north;
- Warrigal Road and Union Rd to the east;
- Gardiners Creek and the Monash Freeway to the south/southwest; and
- The meandering Yarra River to the west.

Boroondara encompasses the suburbs of Ashburton, Balwyn, North Balwyn, Camberwell, Canterbury, Hawthorn, Hawthorn East, Kew, Kew East, as well as parts of Glen Iris, Surrey Hills and Mont Albert.

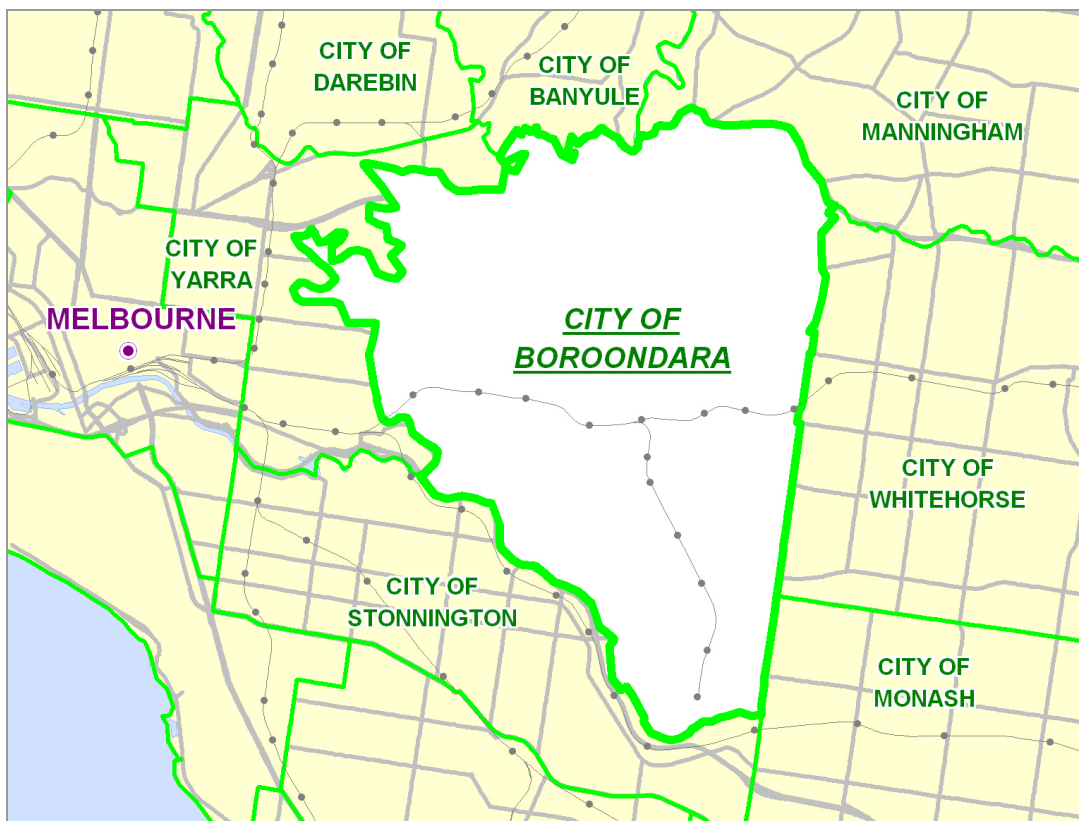


Figure 1 City of Boroondara locality plan

Boroondara is home to a diverse array of land uses:

- 60,000 households, providing residence to 160,000 people;
- Commercial; prominent sectors are property and business services, community services, manufacturing and retail;
- Offices; 60% of which are located in Hawthorn (along Burwood Road and Camberwell Road). Other notable sites include Canterbury Road, Tooronga Road and the Coles Group site at Tooronga Village;

- Education; including 58 primary and secondary schools and 8 specialist schools, Swinburne University and Melbourne University (Hawthorn Campus);
- Health; 15 hospitals and 20 nursing homes;
- Sports Facilities; including 80 outdoor and 60 indoor sporting and recreational activities; and
- Shopping Centres; at Camberwell Junction, Kew Junction and on Glenferrie Road.

The location of all key activity centres is presented on **Figure 2**. A key activity centre is defined by Melbourne 2030 as a location that will attract significant trip volumes, and includes transport hubs, schools, retail areas, parks, hospitals, and sports centres.



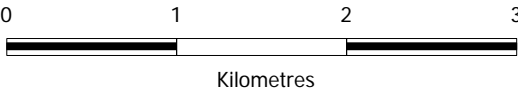
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Boroondara
City Council

Figure 2:
Key Activity
Centres

Legend

- | | |
|-----------------------|-----------------------------|
| — Highways/Main Roads | ■ Schools/Universities/TAFE |
| — Local Roads | ■ Parks |
| ■ City of Boroondara | ■ Retail Areas |
| — Rivers | ✚ Hospitals |
| - - - Railways | |
| ○ Railway Stations | |



4.2 Demographics

The key findings of the demographic analysis based on the 2001 census are as follows:

- 25,000 school aged children reside within Boroondara, attending approximately 60 schools. There are 22 high schools (five combined high/ primary) and two university campuses which represent significant trip generators and an opportunity to encourage cycling to a significant number of people;
- 9% of households within Boroondara do not own a car, and 36% own one car. Given that the average number of residents per household is approximately 2.59, an estimated 66,000 of Boroondara residents live in households with one or less private cars; and
- 1% of Boroondara resident's cycle to work. There is potential to increase the number of commuter cyclists as the municipality is situated within 5km of the CBD and adjacent to other inner suburbs containing employment nodes. All trips between 5-10km are considered local and are achievable on a bicycle with minimal fitness levels.

4.3 Bicycle network

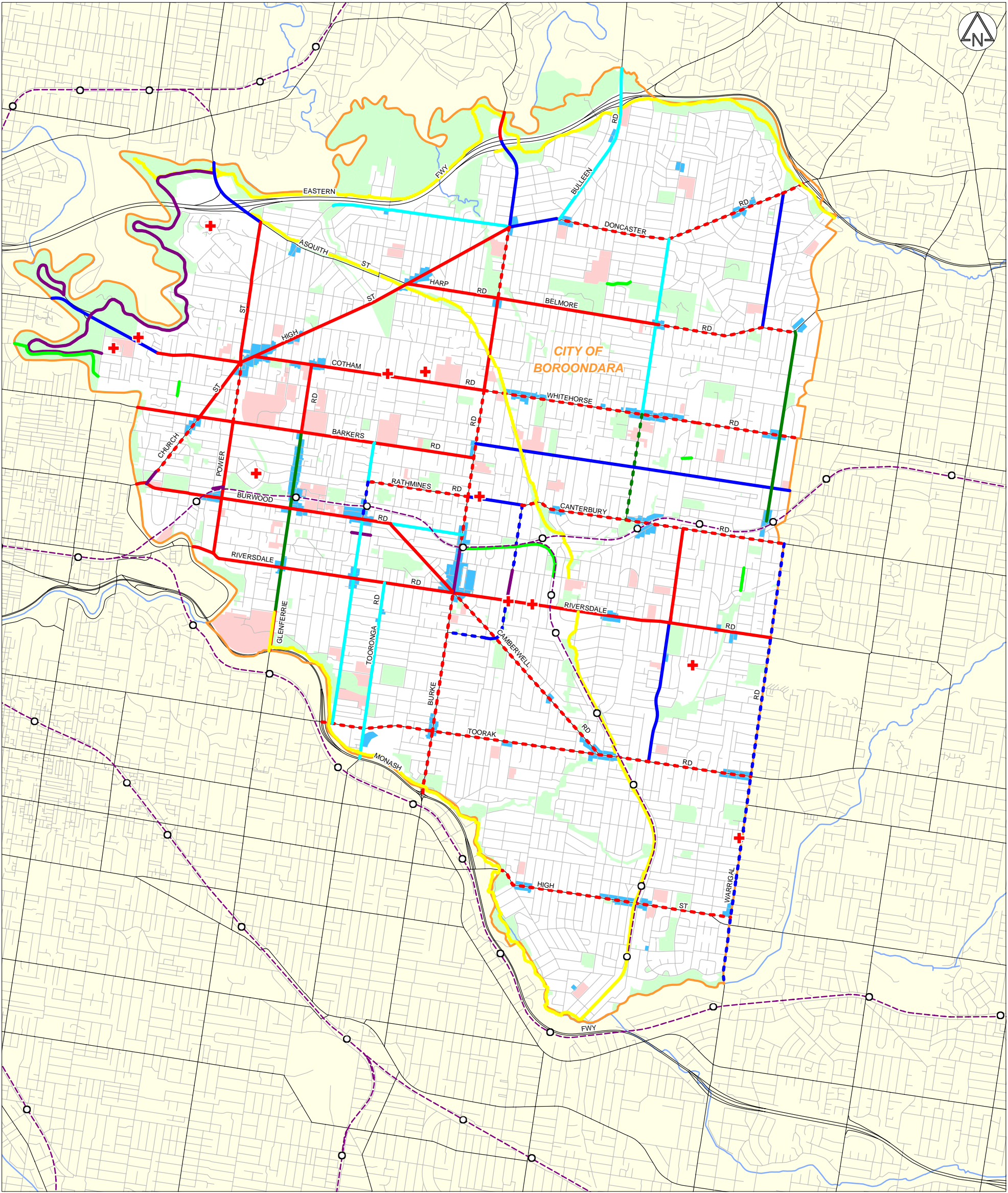
The existing bicycle network is presented on **Figure 3** on the following page.

This plan comprises all on and off road bicycle routes, and includes:

- Routes identified within the VicRoads Principal Bicycle network (PBN);
- All off-road trails; and
- All routes on local roads.

Following **Figure 3**, are **Figure 4**, **Figure 5**, **Table 1** and

Table 2 which provide statistics on the origins of cyclists riding to Boroondara, destinations of Boroondara cyclists by LGA, and a comparison of 2001 and 2006 census Ride to Work data for Boroondara and beyond. All these figures were supplied courtesy of Bicycle Victoria during consultation phases.



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Boroondara
City Council

Existing

- Wide Kerbside Lane
- Shared Bike/Parking Lane
- Exclusive Bike Lane
- Exclusive Bike & Parking Lane
- Off Road Shared Path
- Schools/Universities/TAFE
- Parks
- Retail Areas
- + Hospitals

Proposed

- Wide Kerbside Lane
- Exclusive Bike Lane
- Facility Not Yet Determined

Local Bicycle Network

- Off-Road Bike Route
- On-Road Bike Lane

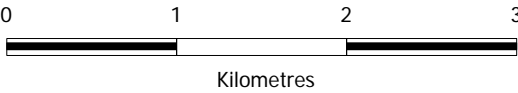


Figure 3:
Existing Network
Plan



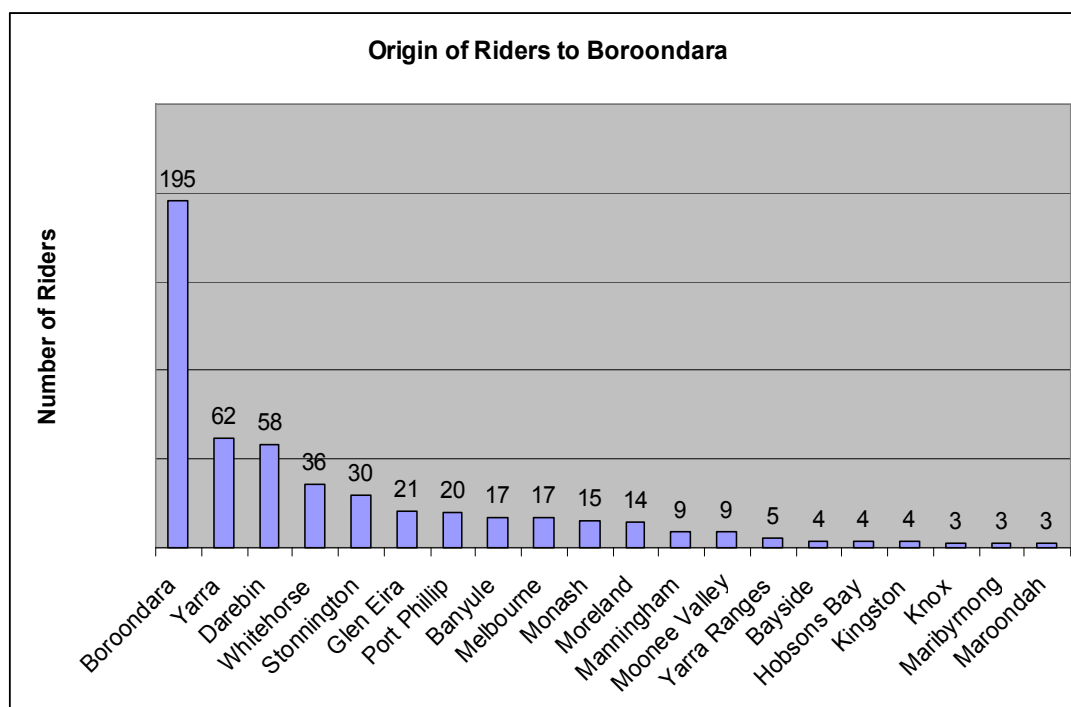


Figure 4 2006 Census Data (from BV)

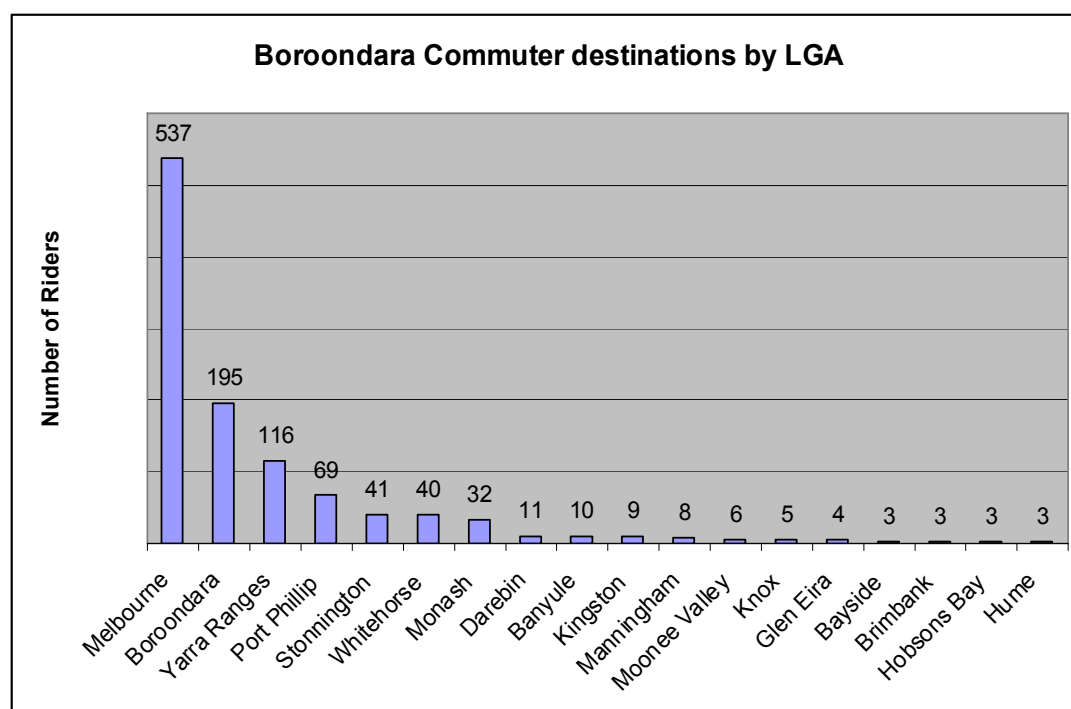


Figure 5 2006 Census Data (from BV)

Table 1 2001-2006 census statistics – Ride2Work Day

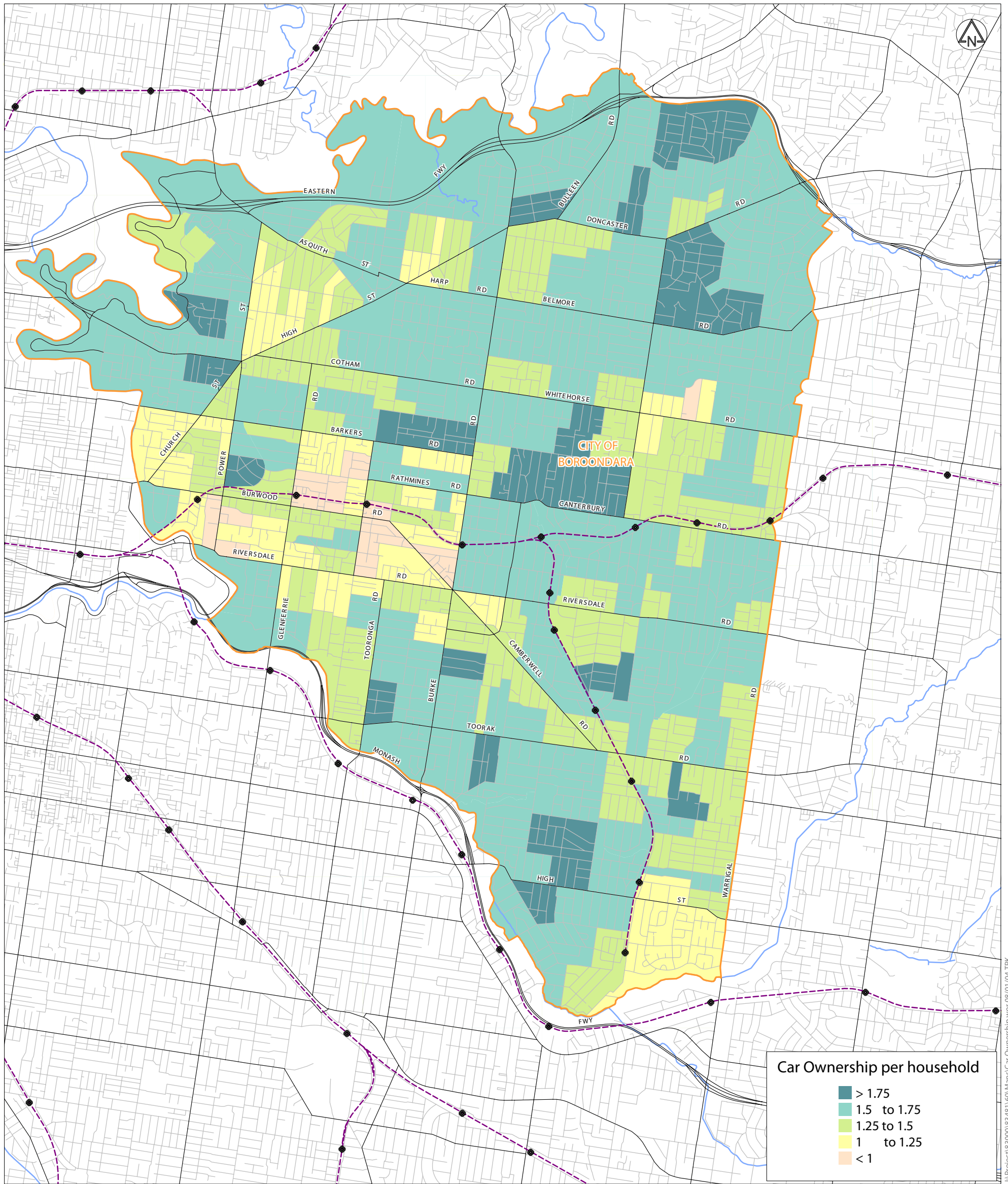
Ranking	Council	2001	2006	Increase	% increase
1	Moreland	1135	2052	917	181
2	Yarra	1519	2333	814	154
3	Darebin	925	1658	733	179
4	Port Phillip	988	1519	531	154
5	Melbourne	566	1050	484	186
6	Boroondara	744	1095	351	147
7	Maribyrnong	247	557	310	226
8	Stonnington	577	825	248	143
9	Moonee Valley	477	700	223	147
10	Glen Eira	486	702	216	144

Table 2 2001 census rider statistics by ward

Ward	Rider numbers	% of population
Glenferrie	159	2.00%
Solway	113	1.60%
Gardiner	95	1.30%
Studley	99	1.30%
Junction	85	1.10%
Cotham	63	0.90%
Maling	63	0.90%
Lynden	51	0.70%
BellVue	42	0.60%
Maranoa	30	0.50%

Based upon ward figures, northern parts of Boroondara experience less ridership. These areas also have higher car ownership (See **Figure 6**) levels and are not as well served by public transport. Improved links to the Main Yarra Trail and the Koonung Trail and upgrading of the trails, Chandler Highway Steps plus the Darebin Creek Trail link could potentially increase numbers.

Conversely Glenferrie and Gardiner wards with relatively lower levels of car ownership and better public transport have higher rider numbers.



Boroondara
City Council

Figure 6:
Car Ownership
(Census 2001)

4.4 Survey Data

Arup undertook a review of all available bicycle survey data to establish the existing demand levels along the key cycle corridors in Boroondara. The review provides an indication of the level of path and road user activity, determines peak flow periods, and assists in determining the demands and route choices of existing cyclists.

Two sets of data were collected and assessed; the VicRoads off-road loop counters, and the manual count data carried out by the City of Boroondara in February and March 2007. The manual count surveys were undertaken under good climatic conditions.

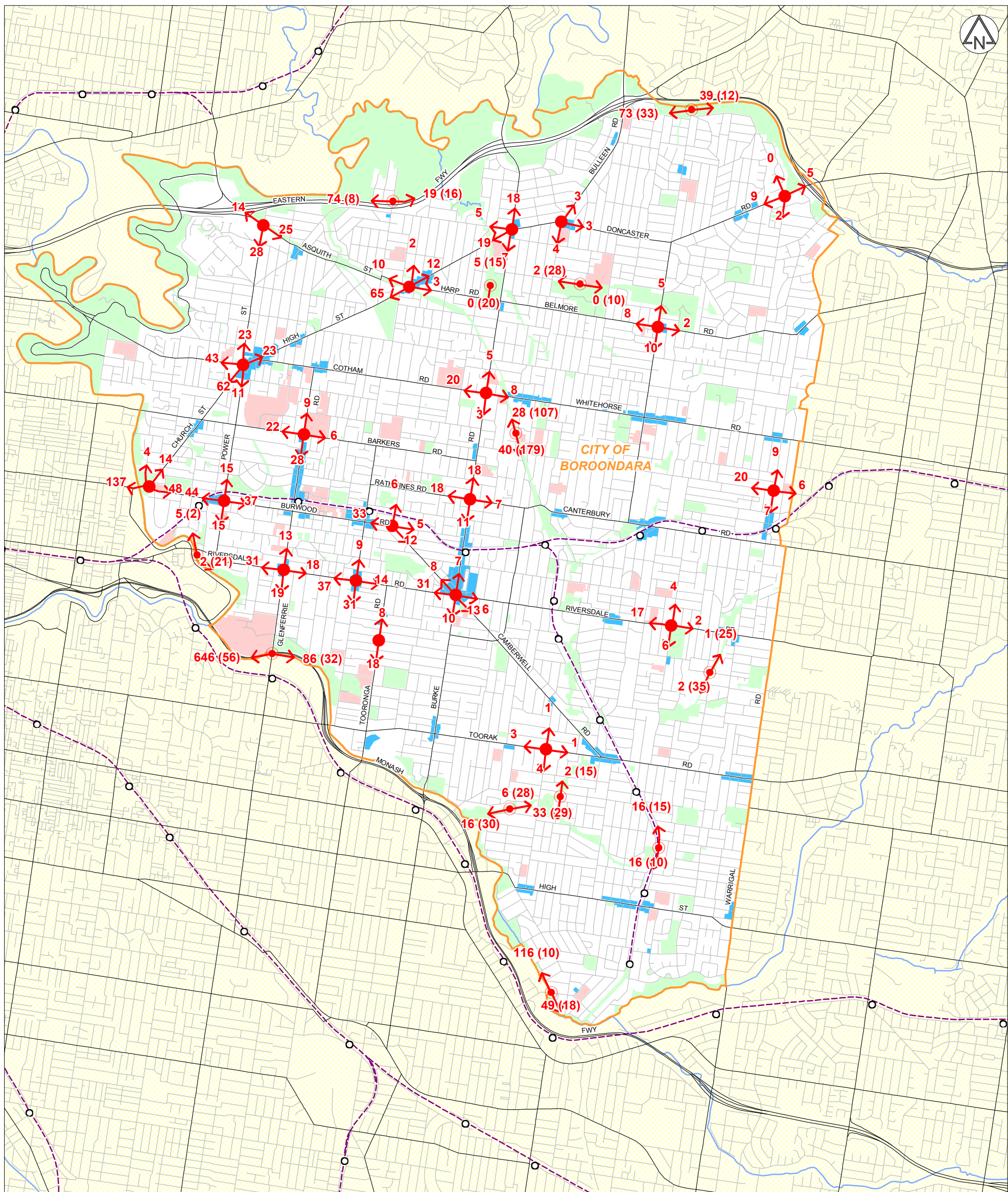
An outline of the key patterns and findings of all on-road and off-road data is summarised below, and is presented on **Figure 7**, **Figure 8** and **Figure 9** on following pages.

4.4.1 On-Road Summary

- On-road movements are the highest on the western border of the municipality, following typical commuter patterns of a large AM city bound demand (137), and vice versa in the PM (154) at the Bridge Road / Church Street intersection;
- The on-road cycle lanes are not subject to any significant weekend flows; and
- The on-road cycle lanes have lower counts than the associated off road shared pathways.

4.4.2 Off-Road Summary

- The Gardiners Creek Trail is very popular for commuters (646 city bound in the AM peak, 7am-9am on the eastern side of Glenferrie Road), and Boroondara is a major catchment area for cyclists on this trail. The trail at the Glenferrie Road intersection is particularly busy during the weekday peak periods, in both directions;
- The Anniversary Trail is primarily used for recreational cycling. This pattern is repeated to a lesser extent through the other recreational corridors, such as on the Ferndale Trail;
- There are limited bicycle flows recorded on off-road paths outside of the weekday peak periods for routes that do not provide a direct connection to major trip generators; and
- The surveyed movements observed at the weekend present an even split in each direction, with no overarching directional trends.



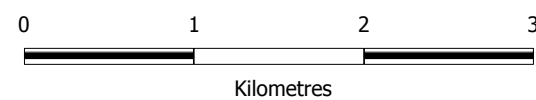
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Boroondara
City Council

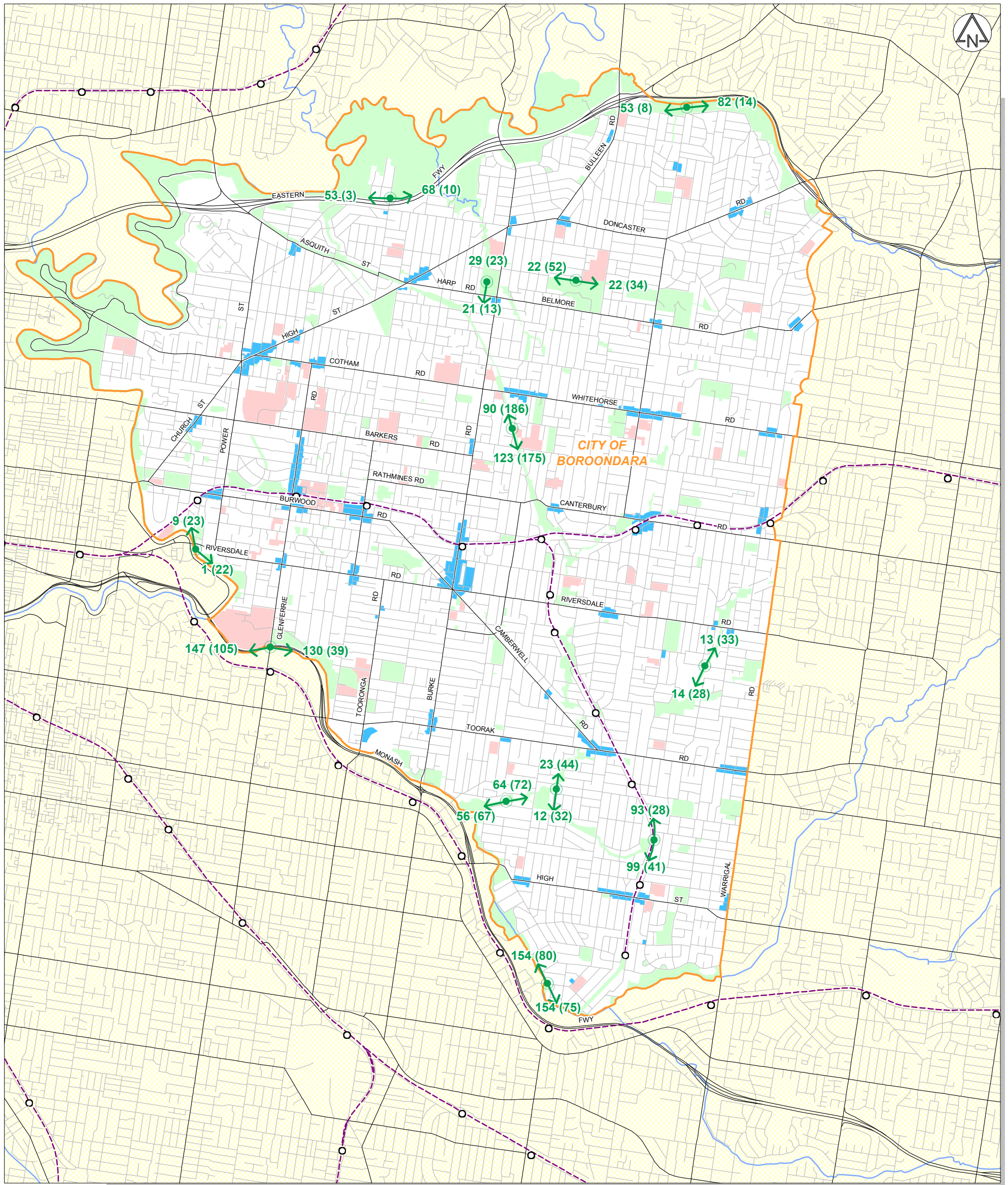
Figure 7:
Bicycle Counts
Weekday AM
(07:00 - 09:00)
Feb 2007

Legend

- Highways/Main Roads
- Local Roads
- City of Boroondara
- Rivers
- Railways
- Railway Stations
- Schools/Universities/TAFE
- Parks
- Retail Areas
- On Road Bicycle Count
- Off Road Bicycle Count (Peds in Brackets)



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4.5 Crash Data

In the City of Boroondara between the five year period of 1/1/2001 to 31/12/2005, there were a total of 258 identified bicycle casualty crashes as shown in **Figure 10** on the following page.

The bicycle casualty crashes were identified using the VicRoads CRASHSTATS database (<http://www.vicroads.vic.gov.au/Home/RoadSafety/StatisticsAndResearch/CrashStats.htm>), and refer to crashes occurring on roads or pathways that were reported to the Police and resulted in a fatality or personal injury. It is expected the actual number of minor crashes and near misses is much higher, since many of these may go unreported. Victoria Police estimate that only 1 in 20 (5%) of all bicycle crashes are reported.

The Existing Conditions Report assessed all bicycle crashes in Boroondara within this five year period. The results are summarised below:

4.5.1 Crash Types

The analysis indicated that when considering all bicycle crashes in Boroondara:

- 65% occurred at intersections (15% at cross intersections, 48% at 'T' intersections); and
- 35% occurred at mid-block locations.

4.5.2 On-Road Crash Blackspots - Intersections

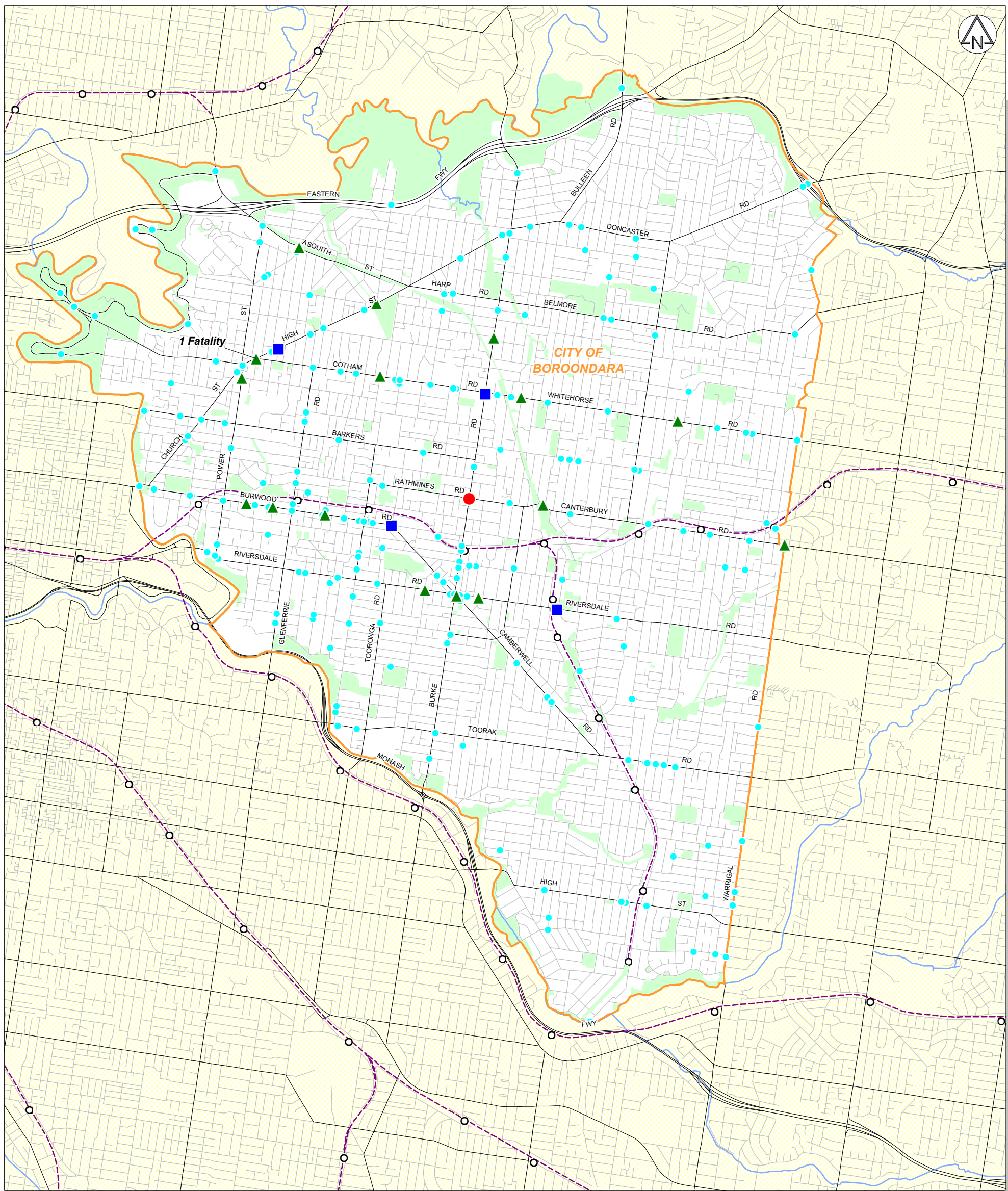
The following intersections have been identified as crash blackspots, with a minimum of three bicycle crashes per site between 1st January 2001 and 31st December 2005:

- Rathmines Rd / Canterbury Rd (4) – Camberwell;
- Riversdale Rd between Burke Rd and Butler St (4) – Camberwell;
- High St / Derrick St (3) – Kew;
- Burwood Rd / Camberwell Rd (3) – Hawthorn East;
- Burke Rd / Cotham Rd (3) – Camberwell;
- Riversdale Rd / Spencer Rd (3) – Camberwell; and
- Camberwell Junction (7) – Camberwell.

4.5.3 On-Road Crash Blackspots – Mid-Block Locations

The following mid-block locations have experienced a high crash record, with a minimum of five bicycle crashes per site between 1st January 2001 and 31st December 2005:

- High Street, between Cotham Road and Parkhill Road (6);
- Burwood Road, between Power Street and Glenferrie Road (5);
- Burke Road, between Riversdale Road and Burwood Road (5); and
- Toorak Road, between Camberwell Road and Warrigal Road (5).



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Boroondara
City Council

Figure 10:
Bicycle Crashes
(Jan 01 - Dec 05)

Legend

- Highways/Main Roads
- Local Roads
- City of Boroondara
- Rivers
- Railways
- Railway Stations
- Parks

Bicycle Crashes

- 1 Crash
- ▲ 2 Crashes
- 3 Crashes
- 4 Crashes



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4.6 Bicycle Links to Adjacent Municipalities

There are seven municipalities adjacent to the City of Boroondara. Existing and proposed bicycle links between Boroondara and its surrounding municipalities are detailed below:

4.6.1 City of Banyule

There is a proposal to introduce an exclusive bicycle and parking lane along Burke Road. The Main Yarra Trail links to Banyule near Burke Rd in Kew East. A key proposed link is between the Darebin Creek Trail and Willsmere Chandler Park in Kew. In June 2008, Boroondara's Urban Planning Committee granted a planning permit to Parks Victoria for the proposed link to go ahead. Parks Victoria has now raised the matter with the Victorian Civil and Administrative Tribunal (VCAT).

4.6.2 City of Darebin

Darebin does not share a border with the City of Boroondara, but it is in the vicinity of the Chandler Highway border. The Darebin Creek Trail link would connect Darebin to Boroondara in Kew. The link was approved by the City of Boroondara in July 2008.

4.6.3 City of Manningham

Bulleen Road and Doncaster Road are the two main transport routes connecting Manningham to Boroondara. There is currently an on-road bicycle and parking lane on Bulleen Road in the City of Boroondara and exclusive bike lane along Doncaster Road between Burke Road and Bulleen Road. A wide kerbside lane on the remaining section of Doncaster Road is proposed on the PBN, and it is understood that there may be scope to upgrade this to an exclusive lane.

Access for cyclists to the centre of Manningham is currently via the Doncaster Road bridge, or via a footbridge over the Eastern freeway. The footbridge is the more attractive route, given that it offers an off-road connection between Estelle Road (Manningham) and the Koonung Trail (Boroondara), both of which are off-road shared paths.

4.6.4 City of Yarra

Direct access to the Melbourne CBD from Boroondara must cross the Yarra River via a limited number of bridges, and then pass through the City of Yarra.

The boundary between the municipalities of Yarra and Boroondara runs alongside the Yarra River and the Main Yarra Trail shared off-road path. There are existing wide kerbside lanes along Riversdale Road, Burwood Road and Barkers Road, whereas Studley Park Road boasts an existing bicycle lane. There are numerous shared off-road foot bridges crossing the Yarra River in Studley Park, Fairfield and Abbotsford.

4.6.5 City of Monash

Warrigal Road identifies the border between Boroondara and the City of Monash. A wide kerbside lane is proposed along this border. A link under Warrigal Rd is proposed for the Gardiners Creek Trail, which also feeds into the City of Stonnington.

4.6.6 City of Stonnington

The only current on-road link between Boroondara and Stonnington is located along Tooronga Road, crossing the Monash Freeway via an on-road bicycle lane. Toorak Road, Burke Road and High Street are all links with proposed wide kerbside lanes, whereas off-road paths are prominent around Glenferrie Road without any clear connection between the two Cities.

The Gardiners Creek Trail passes from Boroondara to Stonnington under Glenferrie Rd, just to the north of Kooyong Railway station.

A path and shared bridge at East Malvern Station is the only defined off-road link. However, there are informal routes over the Monash Freeway linking Dunlop Street (Boroondara) and

Moira Street (Stonnington), and on Waverley Road/Batesford Road which passes under the Monash Freeway through the Malvern Valley Golf Course. Furthermore, informal links between the two municipalities are achieved via an underpass at Glen Iris Wetlands, and via an overpass at York Rd (Stonnington) and Glen Iris Station.

4.6.7 City of Whitehorse

Belmore Road and Whitehorse Road both link to the Boroondara, but do not provide formal cycle lanes. However, the PBN indicates that wide kerbside lanes are proposed on both roads.

Other major links between the municipalities are along Canterbury Road, Riversdale Road and Toorak Road/Burwood Highway, although only Riversdale Road provides a formal on-road cycle lane.

4.7 Review of Existing Draft 1996 Bicycle Strategy

Arup completed a review of the recommendations outlined within the Draft 1996 Bicycle Strategy. Each outstanding recommendation was considered to determine if the proposed action was relevant given the demand, condition and requirements of the current bicycle network.

If appropriate, the outstanding recommendations have been included within the 2008 bicycle Strategy. The recommendations tables (see Table 4 and Table 5) indicate the source of each recommendation, including any outstanding recommendations from the Draft 1996 Bicycle Strategy.

5 Consultation

The consultation process consisted of a number of integral components, as follows:

- Council Officers Meeting;
- Community Consultation;
- Stakeholder Consultation; and
- Bicycle Victoria Meeting.

This section provides an overview of each consultation, and a summary of the key issues and findings of all discussions.

5.1 Council Officers Meeting

A meeting with Boroondara Council Officers was held on Monday 16 April 2007 at the Boroondara Council Offices in Camberwell. The following Council departments were represented:

- Parks and Gardens;
- Leisure and Cultural Services;
- Landscape and Design;
- Statutory Planning; and
- Engineering and Traffic.

Arup presented a summary of the existing bicycle network review, which was followed by an open discussion. The discussion focussed on the constraints of the existing cycling network, future cycling requirements, and the implications of expanding the cycling network from the perspective of each Council department.

The meeting highlighted a range of issues that have been summarised in the following sections in four categories, on-road, off-road, end of trip facilities and cycling promotion.

5.1.1 On-Road Issues

- Importance of completing the Principle Bike Network (PBN);
- Need to supplement PBN with on-road facilities on secondary roads (council roads);
- Need for upgraded standards to improve provision for cyclists on roads with “wide kerbside” lanes; and
- The intersection of Derrick St and High St was identified as a dangerous location. The CRASHSTATS analysis confirms the high crash rate at this location.

5.1.2 Off-Road Issues

- Need for good connectivity with on-road network;
- Importance of completing recommendations from safety audits carried out on the off-road network;
- Need for crossing facilities (improved and new) of main roads;
- Gardiners Creek Trail is not wide enough and requires lighting at night;
- Any measures implemented in parks should consider the implications to other park users. Separation of pedestrians/cyclists where possible, will avoid conflicts and improve safety;

- Gardiners Creek Trail is used by a number of different park users and needs to cater for all - safety is a major issue; and
- At locations where shared pathways bisect with roads, attention should be given to the supporting infrastructure to prevent vehicular access along the shared pathways. Whilst vehicular use of the pathways was not identified as an issue, there is a concern regarding the appropriate type of bollards that should be installed within Boroondara.

5.1.3 End-of-Trip Facilities

- Parking rails/hoops should be installed in prominent locations, including consideration of a bicycle parking station at selected car parks and other destinations;
- The minimum bicycle guidelines (parking and facilities) for new developments were highlighted; and
- More cycle parking is required in parks, particularly the parks located on or adjacent to the main off-road trails, with fitness equipment, or sports facilities (e.g.: at the netball centre in Macleay Park).

5.1.4 Cycling Promotion

- New facilities should be widely advertised to raise awareness of both the new infrastructure and cycling generally in Boroondara.

5.2 Community Consultation

A community meeting was held on Wednesday 2 May 2007 at the Boroondara Council offices in Camberwell. The City of Boroondara advertised the event in the Council newsletter, noticeboards and local media (Progress Leader).

A total of 16 local community members attended the meeting. The majority of attendees were active cyclists in Boroondara with informed views on both the existing issues and the potential to improve conditions for cyclists.

The attendees were divided into three sub-groups for a workshop session. Large-scale base maps of Boroondara were on hand to facilitate the discussion, which focused around the following topics:

- Identification of perceived/actual dangerous locations;
- Locations where people wish to cycle (shops, schools for recreation etc);
- Possible opportunities/constraints;
- End of trip facilities – bicycle storage, showers, toilets, drinking fountains; and
- Education and awareness of cycling.

The community consultation exercise proved to be a valuable source of information and a range of issues were discussed. The main issues that were identified are summarised below.

5.2.1 On-Road Issues

- Traffic calming is considered to be effective with respect to slowing down traffic and improving on-road safety for cyclists (roundabouts/bottlenecks, etc) however this would need to be designed such that these do not pose any hazards to cyclists;
- On-road safety concerns are considered to be a major deterrent in persuading new and infrequent cyclists to become regular cyclists;
- Right turns at signalised intersections are considered to be difficult to navigate. The turning is very difficult given the time constraints, as bicycles are slower than vehicles.

This is a particular concern at intersections with significant gradients, such as the right turn Canterbury Road onto Union Road;

- Wide kerbside lanes offer good visibility for cyclists. However, parked cars often interfere with the paths and reduce the level of visibility;
- Wide kerbside lanes are not as effective as exclusive bicycle lanes. It was suggested that measures to improve wide kerbside lanes be investigated;
- Local streets connecting with main bicycle routes are often very dangerous with little driver awareness and visual blind spots;
- Main roads are often unsafe, and alternative routes on local roads should be considered;
- Chandler Highway Bridge is dangerous as it is narrow;
- Chandler Highway bicycle lanes are a good example of the green surfacing treatment to designate the exclusive bicycle lanes;
- Balwyn Road bicycle lanes are not considered to be a valuable facility due to the gradient of the road; and
- Tram tracks can impact on cycling as they can be slippery (i.e. Burke Road).

5.2.2 Off-Road Issues

- Bollards along bicycle paths at the intersections with roads are potentially dangerous and obstructive (e.g. Burke Road: Anniversary Trail);
- Bollards with horizontal bars are not considered to be safe (as seen on entrances to off-road trails);
- Some corners on the Anniversary Trail are sharp and dangerous, such as the section near Canterbury Road;
- Safety is an issue on the Gardiners Creek trail due to its popularity. Council should consider upgrading the trail to improve safety (i.e. widening, line marking, signage, lighting, etc);
- Poor signage along Anniversary Trail, particularly at intersections and trail entrances;
- Way finding is considered to be poor on all off-road trails;
- The surface of the Ferndale Track is currently gravel which is not suitable for cyclists and a surface upgrade was considered appropriate;
- A connection between the Anniversary Trail and Ferndale Trail would be beneficial;
- There is a gap in the Anniversary Trail, adjacent to Camberwell High School;
- A link is needed from the Gardiners Creek Trail to Tooronga Rd, and from the new development at Toorak Rd;
- No connection exists from the Gardiners Creek Trail to Ashwood Reserve in the City of Monash;
- A link from the Darebin Creek Trail to the Main Yarra Trail would be beneficial;
- Some off-road paths are too narrow, in particular the routes with high cycling demand ;
- The pipe bridge connecting to Fairfield is currently too narrow for two way cycling;
- Bridges are an issue on the Gardiners Creek Trail; they are often too narrow and the approaches to the bridge are at right angles;

- The Toorak Rd crossing of Anniversary Trail is considered to be dangerous;
- If you provide a safe crossing, cyclists and pedestrians will use it. For example signals in Whitehorse Rd at the Anniversary Trail, where use went from 60 cyclists to 500 with the installation of the signals;
- Trails are very popular for recreational cyclists. They underline the importance of continuity and improving trails. They are also a training ground for less experienced cyclists;
- Guard rail protection is required at Hartwell Station (at the Fordham Avenue bend). This is a pinch point for cyclists and is a safety issue;
- Line marking is considered to be important and effective for off road trails;
- Hill'N'Dale park should be considered for upgrade as it is well used by cyclists;
- Lighting on off-road trails is considered to be inadequate, and could be improved; and
- Vegetation on off-road pathways is an issue, such as overhanging shrubs, tree limbs (need for regular trimming), and regular sweeping of paths should be undertaken, particularly during autumn.

5.2.3 End-of-Trip Facilities

- There is a lack of bicycle parking facilities at shopping centres, schools and at railway stations (i.e. at Safeway and Target in Camberwell Junction)' and;
- The Stockland development next to Gardiners Creek Trail is a good opportunity to provide good linkages into the development, with high quality parking, showering and locker facilities.

5.2.4 Cycling Promotion / Information

- TravelSmart Maps should be on display at railway stations and cafés; and
- Some schools do not allow students to ride, which reduces cycling numbers in a key age group.

5.2.5 Intersections that were considered to be dangerous

- Kew Junction;
- Camberwell Junction;
- Road bridges across the Yarra river (on the western boundary);
- Harp Road Intersection;
- Doncaster Road / Eastern Freeway;
- Union Road / Canterbury Rd; and
- Power Street / Riversdale Road.

5.2.6 Network

- There is a lack of an on-road route directly into the City;
- The group attached significant importance to effective synergies between Councils to provide continuity across municipalities; and
- It is important to have good linkages between schools and off road trails to encourage students to ride.

5.3 Stakeholder Consultation

Stakeholder consultation took place on Thursday 3 May 2007 at the Boroondara Council offices in Camberwell. Although a number of key stakeholders were unable to attend the consultation, the following stakeholders were represented:

- Boroondara Bicycle Users' Group, BBUG (4 representatives);
- Banyule Bicycle Users' Group (1 representative);
- VicRoads (1 representative);
- Parks Victoria (1 representative);
- Melbourne Water (2 representatives); and
- City of Stonnington (1 representative).

Arup presented a summary of the existing bicycle network and its associated issues, which was followed by an open workshop discussion session. The attendees were divided into two sub-groups, with the discussion focussing around a set of leading questions, including:

- Behavioural Change Programs;
- The role of each Stakeholder group;
- Funding opportunities;
- Education;
- Policy; and
- Cycling Information.

One group comprised of members of the Boroondara BUG (Bicycle Users' Group) and Banyule BUG, and the second group consisted of all other key stakeholders (including VicRoads, Parks Victoria, Melbourne Water and City of Stonnington). The key comments from each group are summarised in the following sections.

5.3.1 Group 1 - BUG Members

5.3.1.1 Specific Comments

- There is a missing link between the Darebin Creek Trail and the Main Yarra Trail, this issue was agreed to be the number one priority (planning permit for proposed link approved in June 2008);
- The Main Yarra Trail is not currently considered to have adequate signage;
- Cyclists/pedestrian interactions can be dangerous, often resulting in conflicts. Line marking has improved this, and is preferred to signage;
- An improved link across Gardiners Creek at Glenferrie Road would be beneficial as the existing road bridge crossing is convoluted and too narrow for the high number of pedestrians and cyclists that use the route;
- There is a missing link between Anniversary Trail and Warrigal Rd, next to Malvern Valley Public Golf Course;
- Victoria Bridge and Hawthorn Bridge are both dangerous for cyclists, and would suit shared footways; and
- Parking at railway stations is often located on exposed platforms with little or no surveillance. Shelter and security are essential if the parking racks are to be well utilised.

5.3.1.2 General Comments

- The City of Boroondara's website should include links to BV, to BUG's, events, and should include information relating to cycle lane types and safety tips;
- While the introduction of the TravelSmart maps was considered a positive, it was felt they should be more widely distributed. Suggested locations were in bicycle shops and at the information centre in Federation Square. It was suggested that it would be useful for adjacent Councils to hold the maps for adjoining municipalities;
- New cycling measures introduced by Council should be advertised to promote cycling in the Boroondara Bulletin;
- Schools are difficult to persuade to partake in programs, particularly secondary schools. Training Days for school pupils was suggested to teach safe cycling;
- Training Centres are a good way of teaching safe cycling, and could include intersections. Could be located on shared trails;
- Sponsored bicycles for schools are a good idea for cycle promotion;
- Driving tests do not currently include a cycling section, but should. This would improve all road users' awareness of cyclists on road;
- Local press, the Boroondara Bulletin and even the RACV magazine were identified to include tips about how to share the road with cyclists safely, possibly by using profiles existing of cyclists; and
- 'vicbugchat' is an e-list that each of the different BUG's within metropolitan Melbourne can subscribe to, and is really good for improving communication and resolving any boundary issues.

5.3.2 Group 2 – Other Key Stakeholders**5.3.2.1 Promotion/Awareness/Education**

- Behavioural Change Programs were well known to the group, but it was considered that cycle to work programs could be more effective through providing better bicycle parking, encouraging salary sacrificing for bicycles and better end-of-trip facilities.
- The number of pupils cycling to school could be increased by:
 - More/better bicycle racks/sheds;
 - Getting support from parents (including riding with the pupils);
 - Changing the perception of risk/danger in cycling;
 - Critical mass: encourage cycling with friends in a group;
 - Promotion of Anniversary Trail to nearby schools;
 - Improve road crossings near schools, underpasses, better lighting;
 - Look at local road networks near schools;
 - Participate in Bicycle Victoria Hands Up program (monthly school travel surveys);
 - Encourage bicycle shops to offer discounts to schools; and
 - Match a bicycle shop with a local school and advertise in a school newsletter.
- Cycling and walking days could be promoted in the Boroondara Bulletin. In addition, other effective ways of promoting cycling issues include local newspapers, active community groups and websites.

5.3.2.2 The Role of Key Stakeholders

Parks Victoria have been working in partnership with Councils, \$ for \$, and offer a grants program (\$1.23m/yr) for 10 to 15 projects. Parks Victoria have pledged \$2m over four years to the Darebin Creek Link project. Parks Victoria highlighted that it is more beneficial for them to be involved earlier in the planning process, ideally the concept stage, so they have

the opportunity to provide early feedback. They considered that holding regular meetings with stakeholders was advantageous to the overall outcome.

VicRoads have funded bicycle projects in Boroondara, particularly on the PBN. The competing demands between bicycles, trams and cars were highlighted, such that alternative routes may be considered for funding. The VicRoads website provides information that cyclists can access.

The **Department of Transport** offer LAAP funding with a pedestrian/cycle focus. The recommendations at key Activity Centres were noted. Other suggested funding opportunities might include measures for promoting cycling to schools along the Anniversary Trail.

Sport & Recreation Victoria was considered to favour shared pathway projects, including both upgrading existing pathways and measures to initiate an increase in cyclist numbers. It was considered important to consult with Sport & Recreation Victoria early in the process of an infrastructure proposal.

Melbourne Water does not currently offer funding for constructing bicycle infrastructure. However access permission is required for the construction of pathways near waterways. Melbourne Water identified the need to be consulted at an early concept stage when considering shared pathway proposals, particularly those adjacent to waterways.

It was suggested that Boroondara Council should contact Parks Victoria and VicRoads for advice on signage.

5.3.2.3 Safety

Cyclist conflict with pedestrians and dogs was highlighted as a safety issue along shared pathways. The maintenance of shared pathways was also considered to be important. The group discussed the appropriate access barriers onto pathways, and bollards were considered to the last resort on paths or bridges due to safety concerns.

Exclusive bicycle lanes were the preferred treatment along high speed roads, although it was recognised these are road width permitting. In order to adhere to safety standards when considering new infrastructure, both the AustRoads guidelines and VicRoads cycle notes should be consulted.

5.4 Bicycle Victoria Meeting

Bicycle Victoria (BV) was unable to attend the stakeholder consultation meeting. Arup arranged a separate meeting with BV on Friday 11 May 2007. Jason den Hollander, Facilities Development Manager at BV attended the meeting, whereby the discussions focussed on similar issues to the Stakeholder consultation, including:

- The role of Bicycle Victoria;
- Behavioural Change Programs;
- Funding opportunities;
- Education;
- Policy; and
- Cycling Information.

In addition to the broad strategic issues, a number of Boroondara specific network constraints and problems were discussed.

The following sections summarise the key outcomes and comments from this meeting:

5.4.1 General Issues

It was highlighted that an effective bicycle Strategy requires a detailed works program enabling Council to turn proposals into reality. This works program should include the action, indicative cost and timescale of each infrastructure proposal.

With respect to Boroondara, BV considered that any priority assigned to the proposed actions should be based on 'impact per \$'. At the time of the meeting, the following three issues were identified by BV as critical to further developing the bicycle network:

- Priority 1: Darebin Creek link to the Main Yarra Trail;
- Priority 2: Chandler Steps at the Main Yarra Trail; and
- Priority 3: Gardiners Creek link to and across Warrigal Road.

Wayfinding on paths was highlighted as an issue. In particular the use of line marking on pathways was considered important, with limited signage. Where feasible, exclusive bicycle lanes were identified as important, particularly on heavily trafficked streets.

BV summarised the funding opportunities that were available to Boroondara Council for the implementation of actions, including improving bicycle infrastructure or for the marketing and promotion of cycling. These were the MTN and PBN funding (VicRoads), potential matched funding from Parks Victoria, the DOT's (Department of Transport) Local Area Access Program, and major project part funding for one project per municipality from SRV (Sports and Recreation Victoria).

5.4.2 Off-Road Issues

Solway St Bridge on the Gardiners Creek Trail is regarded as sub-standard, being of insufficient width (1.8m). It was recently reinstated by Stonnington City Council, although BV expressed concerns regarding the width of the bridge.

The Gardiners Creek path adjacent to Glenferrie Road is often congested with pedestrians and cyclists, with conflict occurring. BV considers a bridge across the M1 to be the solution to this issue, connecting Gardiners Creek to the Glenferrie Road underpass.

Concern was raised relating to the impact of the M1 Monash Freeway works on the Gardiners Creek Trail. It was considered highly likely that the works would affect the route and potentially cause temporary closures.

BV is aware of the gap in the Anniversary Trail to the north of Riversdale Road. It was suggested that a pathway maybe viable through the alleyway to the east of Camberwell High School, or in the sewage/water land to the west of the tennis courts.

The Anniversary Trail crossing at Toorak Road was considered a problem. It was suggested that a pathway alongside of the railway bridge may be a potential solution. The lack of a crossing of High Street was also highlighted as a problem, and the Anniversary Trail could be widened on the approach to Camberwell Station.

It was highlighted that the crossing of Walmer Street on the Yarra Trail has poor visibility. The steps from the pipe bridge to Chandler Highway were also flagged as a problem.

The surface of the Yarra Bend Trail was identified as being low standard and in need of an upgrade.

A connection from Bulleen Road across the Eastern Freeway was identified as being beneficial as part of the Koonung Trail.

Lighting is supported in principle, however it is considered to be a low priority.

5.4.3 On-Road Issues

The potential to introduce a 'Canning Street' type route was highlighted. Canning Street is located to the northern side of Melbourne Museum and consists of an on-road corridor with

bicycle lanes, pedestrian/bicycle traffic signal crossing facilities and road closures effectively limiting traffic volumes and designating the corridor as a local access road.

The treatment would extend from Burke Road (Sackville Street intersection) through Wellington Street to Denmark Street. This route could possibly even continue on Stevenson and Young Streets to the Yarra Trail on Walmer Street. (Note: Sackville Street is highly trafficked in the peak periods and is also near several schools).

Burke Road between Doncaster and Cotham Roads was identified as a possible location which would benefit from improved on road bike lanes from wide kerbside lanes to exclusive bike lanes.

The need for a connection between Mont Albert Road and the Anniversary Trail was identified. This was flagged to be of particular significance due to the number of schools in the vicinity.

Traffic calming measures were considered to be appropriate along some routes, particularly in the vicinity of schools. Appropriate measures that were identified included kerb out stands and wombat speed humps, which were considered to be particularly appropriate near to roundabouts.

5.4.4 End of Trip Facilities

- Glenferrie railway station was identified as a key Park n' Ride site; and
- The commercial centres along Glenferrie Road, Camberwell and Kew Junctions were identified as currently having limited bicycle parking facilities. It was considered that these locations would benefit from improved end of trip facilities.

5.4.5 Promotion/Awareness/Education

- The TravelSmart maps were considered to be an excellent initiative, however there is a potential to increase their distribution;
- The Boroondara Council website was identified as currently not being proactive on providing cycling information. It was suggested that the website be developed to be a focal point of information on cycling; and
- A 'dogs on lead' campaign was highlighted as being a much needed initiative in Boroondara to improve safety for pedestrians and cyclists.

6 The Strategy

After completing the Existing Conditions Review and consultation, Arup conducted research regarding opportunities and constraints for improving cycling within Boroondara.

These opportunities and constraints are discussed in the following.

6.1 Opportunities

6.1.1 School Aged Population

Demographic analysis indicated that there are 25,000 school children currently residing within Boroondara. Approximately half of these attend high schools. This section of the population has more limited transport opportunities available to them and cycling provides the opportunity for pupils to gain some independence and achieve road awareness.

There is the potential to encourage pupils to cycle to school and providing an improved bicycle network with secure end of trip facilities could promote this. A number of schools are located adjacent to existing shared pathways which offer key linkages to the schools.

Furthermore, 9% of households in Boroondara currently do not own a car. The provision of improved bicycle facilities will potentially improve accessibility for these households.

6.1.2 Provision of an East-West Link

The western edge of Boroondara is located approximately 5 km to the east of the Melbourne CBD, the largest concentration of nearby employment. Currently commuter cyclists lack a direct east-west link into the city. The bicycle count data indicated that the majority of commuter trips occur along the Gardiners Creek Trail located alongside the south and southwest boundary of the municipality. An opportunity exists to improve the east-west linkages through the centre of Boroondara.

6.1.3 Links to Adjacent Municipalities

The City of Boroondara is bounded by a number of municipalities, which provides the opportunity to ensure that the strategic bicycle network is considered. Many cycling trips are likely to either start or finish outside of Boroondara and by considering the linkages to adjacent municipalities such trips can be promoted via improved safety.

6.1.4 Educating All Road Users as to the Needs of Cyclists

The crash analysis indicated that Boroondara has a higher than average proportion of bicycle crashes resulting in serious or fatal injury. Approximately 65% of the bicycle crashes occurred at intersections. Furthermore 16% of crashes were the result of a collision between the cyclist and a parked/ stationary vehicle door. This is possibly an awareness or educational issue as it suggests drivers sometimes open their vehicle doors without looking for a cyclist, or realising that a cyclist is in close proximity.

Promoting the presence of cyclists and their requirements could be achieved by highlighting the needs of cyclists in the Council bulletin/ local newspapers. Increased infrastructure for cyclists, either bicycle lanes or improved signage will also alert motorists to the possible presence of cyclists and create better cyclist awareness.

6.1.5 Provision for Cyclists at Intersections

Intersections by their nature involve a number of points of conflicts between all road users and cyclists are particularly vulnerable. Generally, cyclist safety at a signalised intersection can be significantly improved when on-road bicycle facilities are provided for all elements of the cyclist's path through an intersection. Bicycle lanes can be extended up to the intersection stop line, through the intersection and on the departure together with the provision of advance stop lines for cyclists.

6.1.6 Bicycle Parking

The provision of trip end facilities with particular reference to bicycle parking provides an opportunity to encourage cycling. Bicycle parking audits would identify locations that lack bicycle parking or provision that is inadequate.

6.2 Constraints

6.2.1 Funding/ Cost of Works

A large constraint for maintaining and further developing the bicycle network is funding availability. Whilst other funding opportunities are available, it is likely that Council will be the single largest financial provider. However, Council has the potential to use its spending to leverage funding from other organisations (e.g. VicRoads, Parks Victoria) to improve cycling facilities within the municipality.

Different forms of cycling infrastructure have varying costs associated with them. Advisory signage for instance, is simple and relatively inexpensive to implement. An off-road shared pathway costs considerably more and there are potential land acquisition issues which are limiting factors when considering options.

6.2.2 Safety

The VicRoads CrashStats crash data analysis summarised all of the reported bicycle crashes within Boroondara over the last five years. Safety issues do exist, particularly along highly trafficked streets. Anecdotal evidence indicates that perceived safety issues are often regarded as a potential barrier to cycling.

Within Boroondara there are a number of key strategic routes that are relatively highly trafficked, including routes toward the City during the weekday peak periods (such as along Burwood Road and Power Street), and a number of the east-west routes at all times (such as Toorak Road and Riversdale Road). Some routes are also tram routes and have on-street parking, particularly at local shopping centres, which create a high degree of conflict between the different road users. Particular routes and locations of concern are Riversdale Road, Burwood Road and Cotham Road/Whitehorse Road. Where facilities exist to minimise the potential risk to cyclists, the number of cyclists may increase.

6.2.3 Physical Barriers

There are a number of obstacles throughout Boroondara that limit the expansion of the bicycle network. The Monash Freeway runs along the south-eastern border of the municipality hindering connectivity to the City of Stonnington. This problem is replicated to the north of the municipality where the Eastern Freeway encumbers connectivity to the Cities of Darebin, Banyule and Manningham.

The Yarra River runs along the north and northwest boundary of the municipality with limited existing crossings, and the introduction of any new crossings are likely to incur significant expense. The presence of the Yarra River reduces accessibility to the Cities of Yarra and Darebin.

There are further physical obstacles which limit of cycling circulation within Boroondara, notably the railway lines and the extensive principal road network.

6.2.4 Lighting

Lighting is seen as a significant constraint by commuting cyclists. Corridors that would experience immediate benefit in improved regular lighting would be the Gardiners Creek Trail and the Main Yarra Trail.

6.3 Recommendations

The Strategy recommendations have been categorised into three sections, as follows:

- Section 7 - Infrastructure Recommendations;
- Section 8 - Management and Implementation; and
- Section 9 - Educational and Promotional Activities.

The infrastructure recommendations are summarised initially, followed by the proposed Strategy to maintain the network and implement recommendations. Educational strategies, both for cyclists and other road users, have also been developed to better ensure the safety of cyclists, and to encourage more people to cycle.

7 Infrastructure Recommendations

Infrastructure recommendations were developed following the identification of issues, constraints and opportunities that arose from the existing condition review, the consultation stage of the study and site inspections. Recommendations include safety improvements, addressing gaps in the network and measures to improve the quality, continuity and legibility of the bicycle network.

Each recommendation has been prioritised; this is discussed further in Section 7.1 below.

The source of each issue and resulting recommendation together with priority and indicative cost is outlined within Section 7.2 on the following page.

It is recommended that the provision of bicycle facilities/infrastructure in the City of Boroondara should focus on:

- Locations with a history of crashes involving cyclists and safety concerns, as safety is considered a high priority and a key barrier to cycling;
- Commuter corridors particularly to the City – survey results indicate a high bicycle commuter movement along the Gardiners Creek Trail (weekday inbound flow to the city is 646 cyclists over a 2 hour period);
- Connections with and gaps in commuter corridors;
- Improving access to railway stations, high schools and universities, both in terms of physical access and accessibility with end of trip facilities;
- An improved east – west cycle link to improve the connectivity through the centre of the municipality (See Section 7.2.6);
- Connectivity with existing paths in adjacent municipalities including commuter and recreational routes; and
- Improved wayfinding, signs and road markings.

7.1 Prioritisation

A key component of implementation is the prioritisation of infrastructure in order of strategic importance and effectiveness. The greatest priority has been given to safety improvements to the existing bicycle network identified through consultation, site visits and crash statistics.

The following table provides the basis for the infrastructure prioritisation.

Table 3- Infrastructure Prioritisation Timeframes

Timeframe	Priority	Description
2-3 years	High	Safety improvements to existing pathways/ lanes
2-3 years	High	Short gaps in major on-road/ off-road trails
2-5 years	High/Medium	Wayfinding on existing pathways/ lanes
3-6 years	Medium	New Off-Road facilities linking with corridors to the city or schools
3-6 years	Medium	New On-road facilities linking with corridors to the city or schools
6-10 years	Low	Minor links or facilities that do not improve safety or provide a significant corridor to cycle routes or amenities

7.2 Recommendations

Detailed recommendations are outlined within the subsequent tables and figures as follows:

- **Table 4** details the off-road infrastructure recommendations, including the prioritisation and indicative cost for each item.
- **Table 5** details the on-road infrastructure recommendations, including the prioritisation and indicative cost for each item.
- **Table 6** introduces a number of 'General' recommendations. These proposals do not relate to any specific locations, but are suggested as generic improvements to be implemented across Boroondara to achieve a consistent and comprehensive network. It is recommended that Council allocate regular funding towards the general recommendations each year, selecting the type and location of the improvements on a yearly basis.
- **Figure 11** maps all items introduced in the tables, both on and off road, and across all levels of prioritisation.
- **Figure 12** highlights the items that are recommended to be funded and implemented within the course of the ten year strategy, and are categorised as either High, Medium or Low priority.

The following subsections outline key high priority recommendations drawn from Table 4 and Table 5.

7.2.1 Gardiners Creek Trail

Item 4 - Bottle neck and conflict with pedestrians at Glenferrie Road and the City Link Overbridge. It is recommended that a segregated bridge crossing is provided in order to negate safety concerns and improve/promote the bicycle commuter corridor to the city.

Item 9 – Provide connection between Gardiners Creek Trail, Burgess Street and schools.

Item 21 – Gap in the Gardiners Creek Trail between Warrigal Road and Solway Street. The completion of this link is highly recommended. Detailed proposals are currently outlined for this proposal.

7.2.2 Main Yarra Trail

Item 25 – It is recommended that an alternative route is provided that negates the need to negotiate the Chandler Steps. Parks Victoria is currently developing options.

7.2.3 Inter Municipality

Item 17 – A significant network gap remains with the Darebin Creek Trail. Proposals are outlined by Bicycle Victoria. The link would complete a strategically important component of the Metropolitan Trail Network.

7.2.4 Anniversary Trail

Item 1 – Completion of the gap in the Anniversary trail at Camberwell High School.

Items 3, 5, 22, 23, 24 and 33 – Priority infrastructure recommendations aimed at improving safety issues located along Anniversary Trail including dangerous crossings, pinch points and bollards. This is the highest priority for the Anniversary Trail.

7.2.5 On-road

Item 63 – It is recommended that a corridor is developed connecting schools, rail transport opportunities and link with the Anniversary/Outer Circle Trail via Balwyn Road.

Item 65 – Camberwell Junction requires a retrofit to accommodate safe bicycle movements. It is recommended that a detailed audit and review is undertaken outlining the means to which the intersection can be improved.

7.2.6 East-West Connection

Arup have considered three route options to address the existing lack of a direct east west link into the city. Each option runs through central Boroondara and aims to offer connectivity to a significant catchment area.

Each option has been presented, detailed and summarised within the on-road recommendations (Table 5), and are as follows:

Option 1- Item 54- Mont Albert Road-Burke Rd, through Sackville St /Wellington St to Denmark St–Stevenson Street, Young Street, Walmer Street Bridge to the City of Yarra.

Option 2- Item 59- Morang Reserve through to Highfield Rd; and









Option 3- Item 64- Eastern Rail Trail - from Power St to East Camberwell Station.







Each option has the potential to become a valuable facility to cycling in Boroondara, but the provision of all three routes may be unnecessary. It is recommended that the 3 corridors are subjected to a detailed investigation with aim to highlight a preferred route for development.

7.2.7 Wayfinding











The shared pathway that currently extends through the centre of the municipality is not clearly named. To the south it is named the Anniversary Trail, and to the north it is known as the Outer Circle Trail.


It is recommended that a single naming convention is adopted for this trail. Liaising with VicRoads, Parks Victoria, Bicycle Victoria and other State Government Departments is recommended prior to adopting a name.




Table 4: Recommendations for Off-Road Routes in Boroondara								
Options for Off-Road Cycle Routes								
Item No.	Source & Melways Reference	Route Description	Existing Conditions	Description of Recommendation	Photo	Priority	Indicative Cost (capital costs of works only)	
1	Existing Conditions Map Community Consultation Stakeholder Consultation Council Comments Mel: 60 B1	<u>Gap between Riversdale Road and Prospect Hill Road</u> Complete off-road Anniversary Trail gap between Riversdale Road and Prospect Hill Road.	The current route via Spencer Road is difficult to follow with poor signage and link across Riversdale Park. A narrow strip of land to the west of the tennis courts and high school could provide a continuous off-road route.	<p>Option A - Ideally, provide an off-road route to the western side of the Tennis Courts and Camberwell High School.</p> <p>Option B - At the very least, improve signage to assist cyclists travelling between Riversdale Road and Prospect Hill via Spencer Street.</p> <p>Provide crossing facility in the form of a midblock central island in Prospect Hill Road, east of Spencer Road, and in line with the Anniversary Trail in Matlock Street Reserve.</p> <p>Examine and relocate 40km/h speed sign as it currently obscures visibility for turning cyclists</p>	   	High	<p>Option A: \$120,000</p> <p>Option B: \$2,000</p> <p>Land Acquisition / Transfer</p>	
2	1996 Draft Bicycle Strategy Mel: 46 A12	<u>Complete link at East Camberwell Station</u> Link Anniversary Trail in Boroondara Park to the existing Wandin Road - Stanhope Grove link.	<p>Both the bridge (2m wide) and underpass are narrow, with blind corners. There is a high risk of conflict with pedestrians.</p> <p>East Camberwell Station is likely to be seen as the final destination for pedestrians and cyclists on both sides. The through route is not easily understood, and signage would be required.</p> <p>Signage is very poor and it is difficult to find your way from Camberwell Station to the Anniversary Trail.</p> <p>The path connecting East Camberwell Station to the Anniversary Trail at Myrtle Road is in poor condition.</p> <p>However, there is a possibility to widen the south side of Broadway with a view to providing a shared pathway.</p>	<p>It is recommended to improve the connection between the Anniversary Trail and Camberwell Station.</p> <p>Widen and line mark the existing path between the Anniversary Trail and East Camberwell station.</p> <p>Provide signage between the Anniversary Trail and East Camberwell Station, and from Camberwell Station to the Anniversary Trail.</p> <p>Investigate opportunities for a shared path in Broadway.</p> <p>Investigate feasibility of upgrading existing trail between Camberwell Station and East Camberwell Station and implement recommendations accordingly.</p>	 	Medium	\$30,000	
3	Existing Conditions Map Community Consultation Stakeholder Consultation Mel: 46 A9	<u>Link Mont Albert Road to the Anniversary Trail.</u> There are a number of schools near this location that would benefit from the increased catchment of access to the Anniversary Trail.	<p>Mont Albert Road is a busy Council major road with dedicated bicycle lanes. There is a significant grade difference (5-8metres) between the Anniversary Trail and the road level.</p> <p>A possible link could be achieved from the NW corner of Mont Albert Road.</p> <p>An alternative connection from Stanley Grove may also be feasible.</p> <p>Trail is relatively isolated as it is approximately 500m to the nearest road access in each direction. Personal safety has been raised as an issue.</p>	<p>Provide a ramp between the Anniversary Trail and Mont Albert Road. The best link exists to the NW corner of the Mont Albert Road bridge. This may entail earthworks and bank retention and/or a suspended board. A number of trees may be lost.</p> <p>Examine other locations accordingly i.e. east side of Stanley Grove grading up to Mont Albert Road.</p> <p>Investigate suitability and develop a proposal for a pedestrian crossing in Mont Albert Road.</p> <p>Installation of directional signage on/off the trail.</p>	 	Medium	\$100,000	









4	Existing Conditions Map Mel: 58 D2	<p><u>Glenferrie Road Connection</u> Construct a bridge between the northern part of Gardiners Creek Trail under the Monash Freeway to the Glenferrie Road underpass.</p> <p>This should be a shared path given the high pedestrian and cycle demand at this location.</p>	<p>Location of key importance providing link between Gardiners Trail and Yarra Trail. Approximately 700 bicycle movements are recorded here during AM and PM travel periods. High conflict between peak surges of pedestrians arriving by tram and train with cyclists using the Gardiners Creek Trail, which is approximately 3m in width.</p> <p>Many of the pedestrians using the route during the peak periods are students at the nearby University of Melbourne Hawthorn Campus. Footpath along Glenferrie Road under City Link is narrow with street furniture.</p>	<p>Provide a separate bridge to assist Gardiners Creek Trail cyclists linking with the Yarra Trail.</p> <p>Segregated footpaths should also be considered for cyclists and pedestrians between Glenferrie Road and Kooyongkoot Road, with clear signage and linemarking to encourage pedestrian and cyclist separation.</p>	 <p>Photograph 1: Glenferrie Road under City Link bridge</p>  <p>Photograph 2: Gardiners Creek Trail looking from Glenferrie Road eastbound</p>  <p>Photograph 3: Gardiners Creek Trail looking westbound towards Glenferrie Road</p>	High	\$200,000 to \$300,000
5	Site Visit Mel: 60 B1	<p><u>Upgrade Anniversary Trail along Fordham Avenue</u></p> <p>Upgrade Anniversary Trail along Fordham Avenue between Allambee Avenue and Riversdale Road.</p>	<p>Narrow shared path along Fordham Avenue (photo 1); not obvious that this is the intended cycle path, legibility of route needs to be improved. Cyclists evidently use Woodlands Avenue and cross Riversdale Road to reach Spencer Road, where no crossing facilities exist. Accident statistics highlight a cluster of accidents at this location.</p> <p>There is a blind corner at the intersection of Fordham and Riversdale (photo 2) and a narrow path between Fordham Avenue and Riversdale Avenue pedestrian crossing (photo 3), likewise at the other side of road between pedestrian crossing and Riversdale Park.</p>	<p>The following measures are recommended:</p> <ol style="list-style-type: none"> 1) Widen off-road cycle path between Allambee Avenue and Riversdale Road and provide raised flat-top road hump across Woodlands Avenue. 2) Use nature strip at blind corner to bring cycle route out wide improving situation at blind corner. 3) Pave nature strip between pedestrian crossing and Fordham Avenue and between pedestrian crossing and Riversdale Park; remove or relocate street furniture where possible. 4) Linemark and sign accordingly. 	 <p>Photograph 1: Looking north along Fordham Avenue</p>  <p>Photograph 2: Blind corner Fordham/Riversdale</p>  <p>Photograph 3: Riversdale looking towards pedestrian crossing</p>	Medium	\$75,000
6	1996 Draft Bicycle Strategy Mel: 45 G12	<p><u>Fritsch Holzer Park</u> Develop new shared pathway through Fritsch Holzer Park commencing at Bowler Street and connecting to both Rose Street and Harold Street</p>	<p>Narrow strip of land between Harold Street and Fritsch Holzer Park allows east-west connection between Harold Street and Bowler Street. Connection also plausible with Rose Street. This link could form a component of a major east-west connection between the Anniversary Trail and the Yarra Trail. (See Item No. 59)</p>	<p>Provide formalised cycle pathway from Harold Street through to Bowler Street, include signage as part of the larger east-west connection.</p> <p>Examine connections to the south and east including links to Tooronga Road bike lanes and the BMX Skate Park.</p> <p>Proposals to be consistent with key principles of the Camberwell Junction Structure Plan.</p>	 <p>Photograph 1: Looking east towards Harold Street intersection</p>  <p>Photograph 2: Looking west from end of Harold Street into Fritsch Holzer Park</p>  <p>Photograph 3: Looking west from edge of Fritsch Holzer Park towards Bowler Street</p>	Medium	\$150,000 to \$200,000
7	1996 Draft Bicycle Strategy Mel: 45 E12	<p><u>Scullin Park</u> Introduce a shared pathway through Scullin Park, between Swinburne Avenue and The Boulevard.</p>	<p>Route is short and provides a good north south link between The Boulevard and the Swinburne Avenue car park. With the recommendations in the Glenferrie Structure Plan involving crossing facilities at Oxley Road and Burwood Road, route has the potential to form a good north south corridor to the Glenferrie Precinct.</p>	<p>Progress proposal for new shared path noting the recommendations for the sections further north in the Glenferrie Structure Plan.</p>		Medium	\$75,000

8	1996 Draft Bicycle Strategy Mel: 59 G5	<u>Burke Road South Reserve</u> Develop route between Parkin Street and the Gardiners Creek Trail passing through Burke Road South Reserve. Integrate with proposed WetLand due to be completed end 2008. Consider links east and west i.e. Sinclair Avenue.	Clear evidence of frequent use by cyclists. Route runs adjacent to the sporting ground. Use of link is expected to significantly increase with imminent construction of WetLand. Good flexibility to provide the link between Parkin Street and WetLand and option to include link to Sinclair Avenue.	Provide link between Parkin Street and proposed WetLand with possible extension to Sinclair Avenue. Address issues with drain as part of design process.	 Photograph 1: Looking towards Parkin Street. Existing drainage ditch and football grounds.  Photograph 2: Looking from Parkin Street.	Medium	\$90,000
9	1996 Draft Bicycle Strategy Mel: 59 E3	<u>Patterson Reserve</u> Provide link from Gardiners Creek Trail to Robinson Road and schools/colleges along Burgess Street and Kipen Drive.	Evidence of frequent use by cyclists linking from the Gardiners Creek Trail to Burgess Street, Robinson Road and Kipen Drive. Opportunity exists to provide a surfaced link with the Gardiners Creek Trail to Auburn Road, but there is no convenient crossing point over Auburn Road - which would link both sides of Burgess Street and Hawthorn Secondary School. The Auburn Road and Burgess Street intersection lies on the brow of hill. On-road cycle route along Auburn Road. A signalised pedestrian crossing exists at Kipen Drive adjacent Bialik College.	Introduce cycle paths between the Gardiners Creek Trail and Robinson Road. Investigate potential signalised crossing adjacent to the Burgess Street/Auburn Road intersection connecting with schools. Provide path between Gardiners Creek Trail and the end of Burgess Street through to Auburn South Primary and Hawthorn Secondary College. Provide clear path and signage linking Gardiners Creek Trail with the existing signalised pedestrian crossing at Kipen Drive.	 Photograph 1: Near Burgess Street looking towards Robinson Road  Photograph 2: Looking north from Burgess Street along Auburn Road	High	\$300,000
10	1996 Draft Bicycle Strategy Mel: 45 E4	<u>Eglinton Park Reserve</u> Provide link from Derby Street, through Eglinton Park Reserve to Disraeli Street. Continue on road to Childers Street with a view to completing this connection at the Anniversary Trail.	Route is extremely short and does not form an integral component of any longer route.	Do not progress.			N/A
11	1996 Draft Bicycle Strategy Mel: 45 C2	<u>Link between Yarra Boulevard and the Anniversary Trail</u> Construct off-road path between Princess Street/Earl Street intersection and Yarra Boulevard. This route would pass along the northern boundary of the council depot.	This route would provide a link between the Chandler Highway/Anniversary Trail and Yarr Boulevard. The route would commence at the intersection of the Yarra Boulevard and Wiltshire Drive, use of Wiltshire Drive and the access road south of the Eastern Freeway, the northern boundary of Kew Depot and end at the Princess Street/Earl Street intersection to connect with the Anniversary Trail.	This route would be beneficial, particularly to cyclists travelling between the Anniversary Trail and the Yarra Bend Park. Examine feasibility of route. However, this item is not a high priority as a parallel route as the Main Yarra Trail exists a short distance to the north and the Chandler Highway already has good on-road bike lanes.	 Photograph 1: Wiltshire Drive primarily provides a route to the VicRoads depot.  Photograph 2: The route will pass through the naturestrip, with loss of trees and vegetation	Low	N/A
12	Existing Conditions Map Mel: 46 B4 to E4	<u>Route through Myrtle Park and Gordon Barnard Reserve</u> Develop an off road path between Myrtle Park and Gordon Barnard Reserve, passing through Hislop Park and alongside the tennis courts car park. (Potential long term link between Anniversary Trail and Koonung Trail)	The route between Myrtle Park and Buchanan Avenue is informal at present, and offers the opportunity for upgrade. A route can be achieved through the northern side of Hislop Park and would connect well with Gordon Barnard Reserve to the eastern side of Balwyn Road. No crossing exists at present along Balwyn Road at this location. Balwyn Road has high traffic volumes, however it also has high quality on-road cycle lanes. A link between Hislop Park and Macleay Park is not easy to achieve via Buchanan Avenue; a short on-road section may be required along Lloyd Street if the land adjacent the tennis courts cannot be used. Cyclists may also need to travel a length of Buchanan Avenue unless a direct link with a crossing is achieved between Balwyn High School and the Bowls Club. Maylands Avenue and Gildan Street present an opportunity to link with Stradbroke Park and thereafter the Anniversary Trail.	Short term recommendation: Initially, develop a link from Balwyn Road via Hislop Park, Macleay Park and Stradbroke Park to the Anniversary Trail. Either Maylands Avenue or Gildan Street could be used as an on road link to complete this link. This would also serve Balwyn High School and Kew High School. Long term recommendation: Recommend a long term connection from Balwyn Road (via Gordon Barnard Reserve) to the Koonung Trail (via Koonung Creek Reserve). Investigate opportunities for this link including possible use of Renown St, Reading Ave, Greythorn Rd, Yeneda St and Winfield Rd to the Koonung Trail just north of St. Bridget's Rise. Installation of pedestrian signals in Balwyn Road in line with Hislop Park and Gordon Barnard Reserve.	 Photograph 1: Car park at end of Lloyd Street  Photograph 2: Tennis courts at western side of Hislop Park.	Medium	\$500,000

13	Existing Conditions Map Mel: 45 A11 to A10	<p><u>Wallen Road to St. James Park Link</u> Provide a connection between the Yarra Trail in the City of Yarra northwards to Burwood Road. This connection would need to cross the Yarra River at Wallen Road bridge.</p> <p>From the Wallen Road Bridge, the route would then pass through Morang Reserve, along Austin Street and on Majore Street/Domville Avenue up to Burwood Reserve and St. James Park.</p>	<p>The route between the Wallen Rd bridge and Burwood Road is not very legible at present.</p> <p>Some locations are narrow. Existing cycling signs are vandalised. Connection is good through Morang Reserve.</p>	<p>It is recommended to:</p> <p>Short Term Improve legibility through signage between Burwood Rd (St James Park) and the Yarra Trail. Remove and replace vandalised signs.</p> <p>Long Term (preferred solution) Improve access for cyclists from Morang Reserve via a pedestrian/bicycle bridge over the Yarra River adjacent to the Wallen Road Bridge.</p> <p>This recommendation will involve working with the City of Yarra and other State Government Departments.</p>	   	Medium	<p>Short Term: \$2,000</p> <p>Medium Term: \$3,000</p> <p>Long Term: \$150,000 to \$200,000</p>
14	Existing Conditions Map Mel: 60 D5 to H1	<p><u>Lynden Park / South Surrey Park</u> Develop and formalise the off road path commencing at the Nevis Street/Highfield Road intersection, passing though Lynden Park, across Cornell Street and Riversdale Road, and through South Surrey Park, concluding at Union Road.</p>	<p>Lynden Park between Highfield Road and Cornell Street makes a good route and is currently used as an informal cycle route. The section between Cornell Street to Riversdale Road is narrow and the path is of poor quality. The link with Riversdale Road is substandard as it is too narrow and would require widening. Riversdale Road has to be crossed to reach South Surrey Park.</p> <p>The on road link commencing at the southern side of Lynden Park to Hartwell Station (and the Anniversary Trail) is good and relatively uncongested (via Nevis Street), although the gradient of Nevis Street is quite high.</p>	<p>It is recommended to:</p> <ol style="list-style-type: none"> 1) Upgrade and seal the path commencing at Lynden Park through to South Surrey Park. 2) Investigate feasibility of extending path to Highfield Road. 3) Provide directional signage between the Nevis Street / Highfield Road intersection and the Anniversary Trail at Hartwell Station. 	  	Medium	\$400,000
15	Existing Conditions Map Mel: 59 K7 to 60 D8	<p><u>Ferndale Trail</u> The route runs between Nettleton Park Reserve, through Ferndale Park and Hill 'n' Dale Park and on the Ferndale Trail through Summerhill Park to Prosper Parade.</p>	<p>Currently a mix of asphalt and gravel.</p> <p>The existing path is a well used informal gravel/asphalt route with a number of two-stage crossings where roads intersect. The path links a number of parks, including a skate/BMX park.</p> <p>Path maintenance is an issue in gravel sections where sections of trail are being repaired regularly due to drainage issues.</p> <p>Path would provide an east-west link between the Anniversary Trail and the Gardiners Creek Trail. Route provides a good east west link to the Gardiners Creek Trail and would benefit commuter cyclists.</p>	<p>It is recommended that this link is upgraded to a surfaced off-road cycle route inclusive of signage to adjoining trails and local amenities. The route provides good residential catchment that may encourage individuals to cycle to work in the city via the Gardiners Creek Trail. Route is already used by cyclists for both commuting and recreational purposes.</p> <p>This will provide a strategic connection between the Gardiners Creek Trail (west side) and the Anniversary Trail (east side).</p> <p>Provide crossings (raised) at Florizel Street, Ferndale Road, Wallis Avenue and Gardiner Parade.</p>	  	High	\$600,000
16	Existing Conditions Map Mel: 60 B7 to C6	<p><u>Route from Ferndale Park to Toorak Road</u> Upgrade the gravel pathway to a formalised cycle route. Commencing at Ferndale Park, and passing along Back Creek Reserve, concluding at Toorak Road.</p>	<p>This route would connect to the proposed upgrade of the Ferndale Trail route (Item 15.)</p> <p>Existing trail is a gravel track with sufficient width and opportunity for upgrade.</p> <p>Provide link to Somerset Road and connection to Summerhill Road to link to Anniversary Trail.</p>	<p>It is recommended that this route is upgraded to a formal trail following the completion of the Ferndale Trail (Item 15). This link will connect to Toorak Road and the Anniversary Trail and will offer increased connectivity to residents living in this largely residential area.</p> <p>Examine links through the Harwell car park currently being redeveloped (Leo's Supermarket plus car parking).</p> <p>The signage scheme introduced on the Ferndale Trail should be continued through Back Creek Reserve.</p>		Medium	\$250,000
17	Existing Conditions Map Mel: 45 E1 to 31 E11	<p><u>Link to Darebin Creek Trail</u> Connect the Main Yarra Trail to the Darebin Creek Trail.</p>	<p>Existing gap in the network between two major trails providing an important and at present very difficult inter-municipality link.</p> <p>Bicycle Victoria have strongly campaigned for the bridge to be constructed.</p>	<p>The link addresses a significant network gap. It is recommended that a coherent link is provided between the Darebin Creek Trail and the Main Yarra Trail. A link would provide much needed connectivity between the Darebin Creek Trail, Main Yarra Trail, Koonung Creek Trail, Capital City Trail and the Anniversary Trail.</p>		High	\$3,000,000 to \$4,000,000

18	Existing Conditions Map Mel: 45 B10 to D10	<u>Link between Grace Park and Glenferrie Road</u> Provide a formal off-road link between Grace Park and Glenferrie Road. This will improve connectivity to Swinburne University.	<p>Good link along a wide Lennox Street to Grace Park. Crossing of Power Street is difficult due to high traffic levels and sub standard central island. Traffic signals would be beneficial.</p> <p>Opportunity to provide good off road link between Power Street and Glenferrie Road through Grace Park, along northern boundary of Grace Park Tennis Club and Glenferrie Oval with exact route to be determined as part of Grace Park MasterPlan.</p> <p>Clear signage would also be required.</p> <p>Potential east west link.</p> <p>Key recommendations from the Grace Park MasterPlan would form part of the Glenferrie Structure Plan</p>	<p>An upgrade of the crossing at Power Street is recommended, the installation of a signalised pedestrian crossing should be investigated. Lodge applications with VicRoads and pursue funding.</p> <p>The upgrade of a short length of path immediately adjacent to Power Street is recommended between Elgin Street and Power Street.</p> <p>Adopt recommendations from Grace Park Masterplan.</p> <p>This link is a component of the east-west rail trail as outlined under Item 64.</p>	 	High	<p>Dependent on Masterplan</p> <p>Estimated at \$400,000</p>
19	Existing Conditions Map Mel: 45 C10 to C7	<u>Link between Linda Crescent and L.E.Bray Park</u> Introduce an off-road link between Linda Crescent and L.E.Bray Park, with a view to continuing the path northwards through the VicRoads car park and onto Wellington Street.	<p>Use of existing path in LE Bray Reserve provides a good link between Chrystobel Crescent and Hawthorn Grove. Motel in Hawthorn Grove limits potential to provide access through hotel car park/grounds.</p> <p>Barkers Road would require crossing as it is heavily trafficked or use of Power Street/Barkers Road signals may be an option. Potential for route to pass through VicRoads car park and link in with Wellington Street or Stevenson Street.</p> <p>Proposal would complement key recommendations from the Kew Junction Structure Plan.</p>	<p>Adopt recommendations for Grace Park MasterPlan with respect to link through LE Bray Reserve.</p> <p>Investigate feasibility and develop strategy for link through VicRoads car park to Wellington Street and Stevenson Street.</p> <p>Could potentially link in well with the Eastern Rail Trail (Item No. 64).</p>	 	High (LE Bray Section)	<p>\$70,000</p> <p>(does not include VicRoads section)</p>
20	Existing Conditions Map Mel: 46 A6 to 45 K4	<u>Link between Gordon Street and Stradbroke Park and north to Koonung Trail.</u> Connection between Gordon Street and Stradbroke Park, and north to Hays Paddock linking with the Koonung Creek Trail.	<p>Route is plausible along existing gravel paths between Old Burke Road to Stradbroke Park. An archery club operates in the northern corner of Hays Paddock which may be problematic. A narrowing exists to the southern side of Hays Paddock (Photo 1), and the following is suggested:</p> <ul style="list-style-type: none"> - Consider crossing facility in Kilby Road in line with Frater Street. - A connection between Hays Paddock and Stradbroke Park, with an existing signalised pedestrian crossing in High Street at Kew High School. <p>Two options exist from Stradbroke Park:</p> <p>Option 1 consists of a link adjacent the club house across Burke Road through the reserve that extends to Gordon Street. Conflicts may be an issue adjacent to the club house. The reserve that extends to Gordon Street has numerous small sections and road crossings together with the close proximity of playgrounds. Short length of on road section in King Street.</p> <p>Option 2 is preferred with a link to the western edge of Stradbroke Park with Lady Brasseys Drive and a short on road link (approx. 270m) with the Anniversary Trail. There may be privacy issues to the western edge of Stradbroke Park as cyclists would be able to see into the park.</p> <p>Lady Brasseys Drive may benefit with the introduction of small roundabouts improving priority of cyclists and reducing traffic speeds.</p>	<p>It is recommended that a route is developed linking the Koonung Trail to the Anniversary Trail, giving consideration to both options 1 and 2.</p> <p>Crossing facilities to be provided as part of the proposals including Kilby Road at Frater Street, Harp Road east of Lady Brasseys Drive, Burke Road north of Harp Road, Belmore Road east of Burke Road. Crossing facilities dependent on ultimate option.</p> <p>Both options may be relevant.</p>	 	Medium	<p>\$80,000 to \$100,000</p> <p>Depending on the extent of traffic calming required on Lady Brasseys Drive</p>
21	Existing Conditions Map Mel: 69 B1 to 60 G11	<u>Important Strategic Link to Warrigal Road and Connection to Gardiners Creek Trail in the City of Monash</u> Complete connection of Gardiners Creek Trail to Warrigal Road and link to Gardiners Creek Trail in the City of Monash.	<p>The existing gap between Warrigal Road and the Gardiners Creek Trail & Anniversary Trail is an important strategic link and is a high priority.</p>	<p>It is recommended to:</p> <p>Provide a link to Warrigal Road via Ryburne Avenue, Anniversary Trail, Markham Avenue through Markham Reserve to Warrigal Road.</p> <p>Construct an underpass of Warrigal Road and a connecting bridge across Gardiners Creek to link to the trail on the east side of Warrigal Road in the City of Monash.</p> <p>Ensure link to Anniversary Trail at Ashburn Grove incorporates a good radius with a suitable grade</p>	 	High	<p>Trail through Markham Reserve: \$500,000</p> <p>Underpass and Bridge: \$1,300,000</p>









22	Community Consultation Mel: 45 K6	<u>Burke Road Bollards</u> At the intersection of Burke Road with the Anniversary Trail there are bollards at the intersection and crossings, which are difficult to manoeuvre and cyclists are forced to dismount.	The bollards are currently positioned to discourage cars from entering the trail, as shown on Photograph 1. This location renders the bollards a potential hazard to cyclists, and it was noted that the reflectors had been knocked off the bollards, which further affects the level of safety.	Remove the existing bollards, and monitor the level of motor vehicle compliance. If the unauthorised vehicle access is a regular problem, Council should introduce an appropriate access barrier - as outlined in VicRoads cycle notes 16 and 17. Undertake a comprehensive review of all bollards on the network with an emphasis on removal. Where a bollard is required to prevent unauthorised access, introduce preferred bollard arrangement as detailed in current standards.	 Photograph 1: Anniversary Trail connection at intersection with Burke Rd	Medium	\$1,000
23	Existing Conditions, Bicycle Victoria & Public Consultation Map Mel: 60 D5	<u>Toorak Road Crossing</u> The crossing of Toorak Road is dangerous for cyclists with high traffic flows. Nearby along Toorak Road, traffic accidents have been reported involving cyclists, although none immediately adjacent to the Anniversary Trail.	Traffic signals approximately 100 metres from Anniversary Trail. Footway narrow due to street furniture between signals and trail. Toorak Road has high vehicle movements even during off-peak periods. Parked vehicles obscure visibility adjacent trail entries. Accident statistics do not indicate any resulting accidents.	It is recommended that a pedestrian crossing be provided adjacent to the Anniversary Trail due to: - a significant traffic volume of Toorak Road - high speeds along Toorak Road - a significant numbers of cyclists and pedestrians using the Anniversary Trail. Option 1 - Short Term Provide a north south pedestrian cross walk on the east side of the intersection of Toorak Road and Summerhill Road. Option 2 - Medium Term Provide an additional signalised pedestrian crossing adjacent to the trail (immediately west of railway bridge). Option 3 - Long Term Construct a bridge over Toorak Road.	 Photograph 1: Toorak Road. From Anniversary Trail entry, looking towards traffic signal junction at Summerhill Road	Medium	Option 1 - \$40,000 Option 2 - \$200,000 Option 3 - \$1 million +
24	Community Consultation, Bicycle Victoria & Public Consultation Map Mel: 60 D9	<u>High Street Crossing</u> The High Street intersection with the Anniversary Trail in Ashburton would benefit from an improved crossing to effectively link both sides of the trail.	The pedestrian crossing is approximately 30-40 metres west from the access to Anniversary Trail on High Street. The footway is also narrowed due to street furniture between the crossing and Trail. Potential conflict between pedestrians and cyclists. High Street has high vehicle movements even during off-peak periods, and has a high turnover of parked vehicles. Cyclists frequently risk crossing adjacent to the trail rather than use pedestrian crossing. Parked vehicles obscure visibility adjacent to the trail entrances.	Option A - The preferred option would be to move the pedestrian crossing adjacent to the Anniversary Trail (move will be approx. 30m to the east of existing location), and this would continue to serve pedestrians/shoppers. This would also place the crossing nearer to Ashburton Station. Option B - Do-Minimum: remove the street furniture between the trail entrance and crossing, providing additional footway width and an easier connection. Provide a short length of safety fencing to deter cyclists from crossing immediately adjacent to the trail and to encourage use of the signals.	 Photograph 1: High Street. Anniversary Trail entry, looking towards pedestrian crossing  Photograph 2: High Street. Looking from crossing towards Anniversary Trail entry	Medium	\$200,000
25	Existing Conditions Map Mel: 45 A1	<u>Chandler Steps:</u> The 'Chandler Steps' are part of the Main Yarra Trail. The number and steepness of steps impacts significantly on cyclists and pedestrians.	The existing cycle network requires cyclists to dismount and push their bicycles up or down a significant flight of steps. Channels are provided adjacent to the stepped approaches to assist cyclists. The steps are a significant challenge for cyclists to negotiate and detract from an otherwise continuous cycle route. The Main Yarra Trail from the Pipe Bridge (Item 27) to Yarra Boulevard requires cyclists to climb a significant hill prior to the use of the Chandler Steps to drop back down to the trail adjacent to the Yarra River. Two informal trails exist to the western side of the steps; the furthest trail follows the edge of the Yarra and becomes too narrow and dangerous to encourage use by cyclists. There may be an opportunity to create a connection through the introduction of boardwalks through narrow sections. This would avoid the need to use the Chandler Steps. The nearest trail to the steps provides a wide but extremely steep alternative to the steps, this is too steep to climb for most cyclists. Different options are currently being developed by Parks Victoria to address the 'Chandler Steps' issue.	An alternative route to the Chandler Steps that provides good continuity for cyclists is strongly recommended. Currently, Parks Victoria are examining all possible options and treating it as a 'high priority' project. It has been advised that a tunnel under the Chandler Highway is currently being considered as the favoured option.	 Photograph 1: Chandler Steps, cyclists are required to dismount and push their bikes along the channels.  Photograph 2: An informal trail to conquer the grade difference, however, the top end of this path is too steep for most cyclists.  Photograph 3: Lower informal trail running adjacent the Yarra River frequently used by cyclists despite its extremely narrow nature.	High	Tunnel: \$1,500,000












26	Community Consultation Mel: 59 F5	<p><u>Link to Tooronga Road</u></p> <p>Improved link between Gardiners Creek Trail to Tooronga Rd at Kaikoura Avenue, with an emphasis on creating an improved link northwards to Toorak Road.</p>	<p>The existing link on the west side of Tooronga Road immediately south of Kaikoura Avenue is good between Gardiners Creek and Tooronga Road - 3m wide, sealed, and well maintained. Footpath erosion in the nature strip verges indicate the desired movement adjacent to Kaikoura Avenue, as highlighted in photograph 1.</p> <p>No on-road route is evident between the Monash Freeway and Toorak Road; although on-road bike lanes are illustrated on the Travel Smart Map. Difficult to introduce on-road cycle lanes due to the width of road and right turn lane requirements.</p>	<p>Provide a new path that links the existing pathway to Kaikoura Avenue. This will involve new pavement and pram crossings along the desired paths from the Gardiners Trail spur.</p> <p>Ensure that opportunities are considered for widening of Tooronga Road and provision of on-road cycle lanes with the development of the Stockland development "Tooronga Village".</p> <p>It is recommended that Travel Smart maps and PBN maps be adjusted to reflect the lack of on-road cycle lanes along Tooronga Road.</p>	  <p>Photograph 1: Desired links adjacent to Kaikoura Avenue</p> <p>Photograph 2: Tooronga Road looking north</p>	Medium	\$500,000 (Developer)
27	Community Consultation Mel: 30 J12	<p><u>Pipe Bridge:</u></p> <p>Pipe bridge, connecting to Fairfield is very long and narrow. Can the bridge be expanded?</p>	<p>The existing bridge is too narrow for cyclists to pass. No scope exists to easily widen the path through the main span of the bridge unless the pipe is dropped beneath the bridge. Some scope exists to widen the path along the eastern side of the bridge.</p>	<p>Discussions required with Yarra Valley Water.</p> <p>Can the pipe be dropped beneath the bridge and at what cost?</p> <p>Can handrail be removed providing a greater handlebar width?</p> <p>Can bridge to the eastern side of the bridge be widened?</p> <p>Is a new bridge required?</p> <p>Advocate for short term improvements and new bridge/additional bridge for medium to longer term.</p>	  <p>Photograph 1: Pipe bridge, too narrow for comfortable bi-directional cycle flow.</p> <p>Photograph 2: Eastern side of Pipe bridge.</p>	High	Further investigation required
28	BV Consultation Mel: 69 B1	<p><u>Solway St Bridge</u></p> <p>Solway St bridge is of insufficient width (1.8m) and is sub-standard. It was recently repaired and reopened for public use.</p>	<p>Poor quality narrow path (1.8 metres) immediately adjacent to Solway Street (photograph 1); considerable improvement can be achieved.</p> <p>Solway Street bridge has recently been repaired.</p>	<p>Replace bridge with a new 3m wide bridge and realign the approach from Ryburne Avenue.</p> <p>Potential for significantly increased use once gap in Gardiners Creek Trail is addressed.</p> <p>Strong advocacy and partnership role recommended to progress upgrade.</p>	  <p>Photograph 1: Link to Solway Bridge from Solway Street</p> <p>Photograph 2: Works at Solway Bridge</p>	High	\$800,000
29	BV Consultation Mel: 45 K11	<p><u>Eastern Rail Trail</u></p> <p>The Eastern Rail Trail should be widened on approach to Camberwell Station.</p>	<p>Isolated narrowings at electricity/lighting columns (narrows to 1.2 metres at locations). Overgrowth interferes with cyclists and pedestrians. Route is bounded by housing and the rail line.</p> <p>Some scope exists to increase the width of this corridor by approximately half a metre into the naturestrip between the pathway and rail line (approx.1.5 to 2.0m wide). However, this may be at great expense due to the steep bank down to the train line, and a retaining structure would be required.</p> <p>The feasibility of a bicycle corridor, termed the Eastern Rail Trail, adjacent to the railway line has previously been examined in 1996. It is important to progress the initiatives in the report and investigate alternative parallel links, where necessary, to achieve the progressive implementation of the corridor.</p>	<p>Recommend addressing isolated narrowings through placing electricity/lighting columns outside path. Cut back and maintain trees and shrubs.</p> <p>Set railing into the nature strip providing an additional half a metre.</p> <p>Progress initiatives to provide a bicycle corridor parallel to the rail line to complete the Eastern Rail Trail over time.</p>	  <p>Photograph 1: Trail near Camberwell Station and Royal Crescent</p> <p>Photograph 2: Trail near Camberwell Station and Royal Crescent</p>	Medium	To be Determined Costs variable - dependent on extent of works
30	BV Consultation Community Consultation Mel: 44 H7	<p><u>Walmer St Bridge:</u></p> <p>The bridge crossing of Walmer Street offers poor visibility, insufficient width, surface and grade.</p>	<p>The bridge is narrow, particularly on the north side and is uncomfortable for cyclists to cross; bi-directional movements can require dismount. High pedestrian volumes use the bridge, and conflicts between cyclists and pedestrians are likely.</p>	<p>Advocate for upgrade of Walmer Street Bridge.</p> <p>Specific attention to be given to width, approach grades and lighting.</p> <p>Replacement of the bridge would also tie in with the State Government proposals to improve east west links including use of the Walmer Street Bridge.</p>	  <p>Photograph 1: The Walmer Street bridge does not offer sufficient width for two-way flow.</p> <p>Photograph 2: A significant volume of pedestrians were observed using the bridge.</p>	Medium	Further investigation required

31	Community Consultation Mel: 60 C4	<u>Dangerous bend at Hartwell Station</u> The Fordham Avenue bend next to Hartwell Station is a squeeze point for cyclists and would benefit from a guard rail to improve cyclists' safety.	Path narrows to approximately 1.5 metres. Difficulty for cyclists to pass. Risk associated with cyclists catching safety barrier columns. Consequence of cyclists falling at this location could be high if cyclist falls into safety barrier columns.	Remove/relocate nearby trees and widen path. Provide covering to rear side of safety barrier.	 Photographs 1 & 2: Anniversary Trail adjacent to Fordham Avenue bend	Medium	\$30,000 to \$50,000
32	Community Consultation Mel: 44 J10	<u>Hawthorn Bridge</u>	Existing footpaths either side of Hawthorn Bridge are fairly narrow with pedestrian guardrail between footway and carriageway. Footway surface is in poor condition. No on-road bicycle provision. High vehicular flows makes shared use between traffic and bicycles dangerous. The bridge at present does not cater well for cyclists.	As a minimum, the intended shared use of the footpath by both pedestrians and cyclists should be clearly outlined, with improved kerb transitions from road to footpath. The re-allocation of road space (such as a reduction from 4 traffic lanes to 3 traffic lanes), would provide additional space for pedestrians and cyclists. The central lane would require a tidal flow treatment to cater for traffic volumes. The plausibility of this arrangement would require considerable further investigation.		Medium	\$20,000
33	Community Consultation	<u>Link to Koonung Trail via Old Burke Road</u>	The link spans approximately 100 metre in length, is relatively narrow, poorly lit, with obstructive vegetation. Visibility is limited, and safety is a concern.	Develop strategy to improve the level of safety for the path linking the Koonung Trail from the Burke Road overpass to Old Burke Road. Remove vegetation and provide street lighting.		Medium	\$20,000
34	State Government Initiative	<u>New Yarra River Crossing north of Hawthorn Bridge</u>	The State Government intends to investigate the feasibility of a new pedestrian/cyclist bridge across the Yarra north of Hawthorn Bridge to link into the Capital City Trail in the City of Yarra, and to connect to a potential east west route into the City via Crown Street, Highett Street and Hotham Street/Albert Street.	Advocate for improved east west connections. Progress with State Govt. and other authorities to develop a solution that would be acceptable to Councils and other key stakeholders.		Medium	Further investigation required
35	BBUG	<u>Caravan Street to Union Road</u>	Potential for good local link between Gordon Barnard Reserve using Loma Linda Grove and Wynyard Crescent at the west end and to the trail accessed off Strabane Avenue in the City of Whitehorse at the east end. An existing reserve connects Union Road and Caravan Street, although no formal bicycle route exists. Caravan Street leads to Greythorn Road . Union Road and Greythorn Road both have on road bike lanes. Reserve is relatively narrow and crosses Kenilworth Street, Carrigal Street and Yandilla Street. Potential for good local link.	Investigate feasibility for link between Caravan Street and Union Road through the reserve. Progress initiatives accordingly.		Medium	Further investigation required








36	Council Officers	<u>Winton Road Pedestrian Signals</u>	<p>Winton Road is a relatively busy collector road, with traffic travelling at high speeds.</p> <p>Pedestrians and cyclists using the Gardiners Creek Trail are required to cross Winton Road, which is difficult and unsafe, and reduces the continuity and convenience of the trail.</p>	<p>Develop a design for installation of pedestrian signals and secure funding accordingly.</p> <p>Pedestrian signals to be very responsive to pedestrians and cyclists, allowing sufficient green time to cater for the high demands; similar to the Dunlop Street signals.</p> <p>This provides an opportunity to trial the advance triggering of pedestrian signals.</p>		Medium	\$180,000
37	Council Officers	<u>Victoria Park Improvements</u>	<p>Step in north south path on west side of reserve affects access. Poor signage to access the Childers Park South linear reserve in Belford Road immediately north of High Street.</p>	<p>Examine and address step issues on path. Improve signage between Victoria Park and the Childers Park South linear reserve in Belford Road.</p>		High	\$10,000

Table 5: Recommendations for On-Road Routes in Boroondara

Options for On-Road Cycle Routes							
Item No.	Source & Melways Reference	Route Description	Survey Comments	Description of Work	Photo	Priority	Indicative Cost (capital costs of works only)
50	Council Officers Meeting Mel: 45 D6	<u>Derrick Street/High Street Intersection</u> A high crash rate location was noted at the intersection of Derrick St and High St.	<p>A review of the crash data has indicated that 3 crashes have occurred at this location in the last 5 years. All 3 crashes were 'right through', whereby a vehicle performing a right turn out of Derrick Street strikes a bicycle heading straight down High Street in a south westerly direction.</p> <p>The site visit demonstrated the limited visibility available to traffic turning right out of Derrick Street, limited by the parked cars on High Street.</p>	<p>Council have indicated that this location has been flagged as a blackspot, and the safety issues are currently under assessment.</p> <p>Progress improvements with VicRoads.</p>	 <small>Photograph 1: High Street, looking east. Derrick Street connects at right of photo.</small>  <small>Photograph 2: High Street, looking west. Derrick Street connects at left of photo.</small>	High	N/A
51	Community Consultation Mel: 45 G5	<u>Adeney Avenue Traffic Calming</u> Additional traffic calming (speed humps/roundabouts) and refinements to existing treatments should be considered along Adeney Avenue.	<p>The road width is sufficient on Adeney Avenue next to Victoria Park at 10.5 metres, and offers parking to cars on both sides. There is traffic calming in place, with the road narrowing to one lane width (measured to be 4.5m) at regular intervals creating pinch points and requiring cars to give way to oncoming traffic.</p> <p>Site observations indicate that traffic speeds and volumes are low and suitable for shared bicycle use with motor vehicles.</p> <p>Adeney Avenue to the south of Parkhill Road is largely quiet and residential, with speed humps and roundabouts preventing high traffic speeds.</p>	<p>Adeney Avenue is relatively safe for cyclists, with a comprehensive set of existing traffic calming measures. It is recommended that this corridor is upgraded and designated as a shared on-road cycle route, with a view to connecting this route through to Davis Street and Auburn Road in the long term.</p> <p>Short term recommendations: Introduce a formal shared cycle route through Adeney Avenue, including cutting through the inside of the traffic narrowing islands (shown on Photograph 1) to provide a short bypass cycle lane. Line marking for the cycle lane and signage is advised. Signage is required to inform both cyclists and motorists of the shared nature and continuity of this corridor. Bicycle symbols on the carriageway may further reinforce the intended character of the route.</p> <p>Long term recommendations: Adeney Avenue can become part of a strategic north-south route from the High Street/Harp Road intersection, across Cotham Road (via a new signalised crossing), along Davis Street and Wrixon Street, and onto the Auburn Road cycle lanes, concluding with the existing connection to Gardiners Creek Trail at Toorak Road.</p> <p>Improve links between Victoria Park and the Childers Park South Reserve accessed off Belford Road to provide a link to the Anniversary Trail in Earl Street and the Main Yarra Trail through Hyde Park and across Kilby Road via the Eastern Freeway Underpass at Kilby Road.</p>	 <small>Photograph 1: Adeney Avenue, adjacent to Victoria Park, facing north.</small>  <small>Photograph 2: Adeney Avenue, south side, looking north towards Parkhill Road.</small>	Low	<p>Short Term: \$20,000 to \$30,000</p> <p>Long Term: Further investigation required</p>
52	Community Consultation Mel: 47 H11	<u>Union Road / Canterbury Road Intersection</u> The right turns at the Union Road / Canterbury Road signalised intersection are difficult for turning cyclists.	<p>No issues apparent that differ from a normal signalised intersection.</p> <p>The community member concerns relate to cyclists being slower than cars and being unable to turn within the allocated green time.</p> <p>Should investigate phasing of lights or bicycle envelopes in right turning lanes of intersections, not just the left hand lane.</p>	<p>Undertake a road safety audit of the intersection.</p> <p>Particular consideration to be given to introducing bicycle storage boxes in right turn lanes and/or increasing the green time allocated to vehicles performing right turns, including investigation of phasing.</p>	 <small>Photograph 1: Canterbury Road looking east</small>  <small>Photograph 2: Union Road looking north</small>	Low	N/A
53	Community Consultation Mel: 45 G4	<u>Harp Road/High Street/Willsmere Road Intersection</u> This intersection is considered dangerous for cyclists.	<p>Improvements can be made to the signalised intersection providing a more natural path with the Anniversary Trail.</p> <p>Poor direction is provided from one side of the intersection to the other and it is difficult to locate the southbound end of the path.</p> <p>Major intersection with associated delays for users.</p>	<p>Clear signage for cyclists to locate cycle trails required.</p> <p>New alignment to crossing path on eastern side of intersection. See Photo 1.</p> <p>Investigate feasibility of underpass of High Street Kew for Anniversary Trail at Harp Road</p>	 <small>Photograph 1: Eastern side of crossing at Harp St/High Street intersection. Continuation of path is 25 metres to the left side of picture</small>  <small>Photograph 1: Parking and adjacent building site obscures path to eastern side of intersection</small>	Medium	\$5,000

54	BV Meeting State Government Proposal through VicRoads Mel: 45 K8 to Mel: 44 H7	<u>East-west Strategic Route: Burke Road to Denmark Street to Walmer Street Bridge</u> Route between Burke Rd (Sackville intersection) through Sackville St and Wellington St to Denmark St.	Wellington and Sackville Street connect with a number of schools between Burke Road and Denmark Road. These is an opportunity to improve connections with these schools. At the west end, Stevenson St has been treated with traffic calming treatments and Young St is not heavily trafficked. Widths vary between 7.4m and 9.2m. Wellington Street between Denmark Street and Glenferrie Road is 12.8m wide and has an on-road cycle lane, as shown on Photograph 1. Wellington Street between Glenferrie Rd and Davis St is 9.7m wide (shown on Photograph 2), but is not as heavily used. This section is largely residential with parked cars on both sides. Sackville Street is 9.3metres wide with parking spaces on both sides and is busy during the school peak periods (shown on Photograph 3). Sackville St is very busy in the peak periods and is near several schools. The State Government through VicRoads intends to provide new crossing facilities at Burke Road immediately north of Sackville Street and new traffic signals at the intersection of Denmark Street and Stevenson Street. Proposal forms part of a State Government proposal for a new east west link between Boroondara and the CBD.	This east-west route is one of three east west routes proposed. This would connect from Sackville Street to Mont Albert Road via a Burke Road crossing immediately north of Sackville Street. This would create a cycle route covering a significant distance, and potentially a valuable east-west link. The route would then follow Baker Street, Elizabeth Street and Albert Street to the City. The following is proposed: - the entire route be formalised with continuous signage - new pedestrian signals in Burke Road immediately north of Sackville Street. - continue on-road provision along Wellington Street between Glenferrie Road and Davis Street, and explore the possibility of removing carparking on one side or provision of indented parking. - use of new shared path on east side of Denmark Street and new signals at Denmark Street / Stevenson Street to access Stevenson Street, Hodgson Street, Young Street and Walmer Street Bridge. - installation of a new signalised intersection at Denmark Street / Stevenson Street. - Stevenson Street and Young Street to become an on-road shared route. It is suggested that markers, signage and surface marking be introduced to inform drivers and cyclists of the shared nature of the route. - infrastructure improvements need to be reinforced with behavioural change initiatives which aim to reduce traffic generated by the school run. - advocate for completion of State Government east west link for sections in City of Yarra and the City of Melbourne.	 Photograph 1: Wellington Street, between Denmark St and Glenferrie Rd  Photograph 2: Wellington Street, between Glenferrie Rd and Davis St  Photograph 3: Sackville Street, currently an informal cycle route  Photograph 4: Young Street, narrow, but with traffic calming measures.	Medium	\$400,000 to \$500,000
55	BV Meeting Mel: 45 K3	<u>Burke Road Bike Lanes</u> Burke Road between Doncaster Rd and Cotham Rd could have a wide kerbside lane.	The section of Burke Road between Doncaster Road and Whitehorse Road is 14.5 metres in width, with parking permitted in both directions. On road bike lanes in the form of wide kerbside lanes are in place between Belmore Road and Cotham Road. Opportunity for wide kerbside lanes between Doncaster Road to Belmore Road and Whitehorse Road to Monash Freeway with section in Burke Road shopping strip, reverting to shared bicycle parking lanes similar to Glenferrie Road shopping strip. Burke Road does provide an important link for cyclists onto the Anniversary Trail (at Gordon St) and is a significant catchment area for residents.	Forms part of PBN. Develop detailed application for on road bike lanes between Doncaster Road to Belmore Road and Whitehorse Road to Monash Freeway. Incorporate coloured markings where possible and examine suitability of exclusive bike lanes.	 Photograph 1: Burke Road, between Belmore and Whitehorse Roads, facing south.  Photograph 2: Burke Road, between Gordon Street and Whitehorse Road, facing south.	High	N/A
56	Community Consultation Mel: 45 D3	<u>Willsmere Road / Earl Street Intersection</u> Consider introducing a zebra crossing at the Willsmere Road / Earl Street intersection.	Two crashes have been recorded at this location involving bicycles over the past 5 years. Both crashes were caused by a car heading north on Willsmere Road and striking a cyclist heading along Earl Street. It is unclear why cyclists choose to use Earl Street given that the Anniversary Trail runs parallel and is far safer. It is possible that cyclists live locally and were on route to the trail. Lanes are narrow on each approach to the roundabout and on the circulatory carriageway.	Review the roundabout geometry and compare with guidance documents that outline best practices for design of cycle friendly roundabouts. Provide a zebra crossing n Willsmere Road north of Earl Street in line with the Anniversary Trail. Trim vegetation on approaches to roundabout to improve visibility	 Photograph 1: Anniversary Trail crossing of Willsmere Road and roundabout.	High	N/A
57	Community Consultation Mel: 45 B1	<u>Chandler Highway Bridge</u> Chandler Hwy Bridge, widen bridge for pedestrians and cyclists.	Improvements have been implemented by VicRoads that provide on-road and off-road connections with the bridge. Widening of bridge footpath would be difficult (and costly) given the old structure and condition of the bridge. Heavy use not witnessed. Darebin Creek proposals would provide a significant improvement for cyclists coming from Darebin. VicRoads have a long term plan to duplicate the bridge. Improved access would be incorporated as part of these works. Footpath exists only on the west side of the Bridge. Use of Chandler Highway Bridge is difficult and compounded by relatively poor visibility.	Incorporate improvements to pedestrian and cyclist access as part of the long term plan to duplicate the Chandler Highway Bridge.	 Photograph 1: Chandler Bridge, pedestrian link  Photograph 2: Chandler Bridge - at start of crossing	High	Further investigation required
58	Community Consultation Mel: 45 G11	<u>Burwood Road / Camberwell Road Intersection</u> The intersection of Burwood Road / Camberwell Road has been identified as dangerous by BBUG members.	The Burwood Road (east) approach has two right turn lanes. Parked vehicles narrow the Burwood Road eastern approach. There have been 3 crashes involving bicycles at this location in the past 5 years. Each crash has been caused by a lack of clarity with lanes and side on swiping has occurred. Although there are bike lanes marked, they appear to be ignored by motorists.	It is recommended to improve the clarity and prominence of the lane markings at this intersection, with particular reference to the Burwood Road eastern approach. An overall review is recommended at this intersection. Painting the cycling lanes in green on the approaches to the intersection may improve driver awareness of cyclists. Review intersection and implement recommendations accordingly. Develop options to extend bike lane to intersection - currently stops 100m short of intersection.	 Photograph 1: Eastern approach to the intersection  Photograph 2: End of cycle lane on eastern approach of the intersection	High	Dependent on review potentially \$50,000

59	Site Visit Mel: 45 C7 to Mel: 45 K8	<p><u>East-West Strategic Route: Morang Reserve, Fritsch Holzer Park and Prospect Hill Road</u></p> <p>Starting at Morang Reserve and Morang Road, a connection through the residential Power Avenue will connect to the quiet Wattle Road via an existing signalised crossing in Power Street.</p> <p>The proposed route then continues to Urquhart Street - crossing of Glenferrie Road is achieved through an existing signalised crossing.</p> <p>The route then continues across Auburn Road with a new set of pedestrian signals at Bowler Street and through to Fritsch Holzer Park (in conjunction with Item No. 6). Use of Harold Street or an alternative in Mayston Street, through to Prospect Hill Road, concluding at the intersection with Middlesex Road.</p>	<p>This route is strongly recommended. - This route should be combined with the proposed upgrade to Fritsch Holzer Park (Item No. 6), to provide a complete connection through to Burke Rd (via Harold St or Mayston St), and onwards to the Anniversary Trail (via Prospect Hill Rd).</p> <p>The route would utilise existing signalised crossing facilities of Power Street, Glenferrie Road, Burke Road and Stanhope Grove. New signals would be required in Auburn Road in line with Bowler Street.</p> <p>The connection from Morang Road to Power Avenue will require widening of the existing path, and overcoming a minor level change (1 step, shown in Photo 2). The existing traffic signal crossings of Power Street and Glenferrie Road and are well located. Wattle Road is quite narrow (7.7m) and has been treated with traffic calming measures in speed humps.</p> <p>Urquhart Street has also been treated with traffic calming treatments. Both Urquhart Street and Bowler Street provide the potential for a good on road corridor for cyclists.</p> <p>Harold Street is busier, particularly during peak periods, but provides the most direct route to Burke Road and Prospect Hill Road. Use of Mayston Street as a quieter and safer alternative may be a good option.</p>	<p>Introduce signage along this route to create an east-west corridor. Examine suitability of more effective on road facilities.</p> <p>A number of existing signalised crossings for pedestrians fall conveniently along the route and would serve less confident cyclists.</p> <p>Minor earthworks, removal of step and path widening are required to connect Morang Reserve to Power Avenue via a shared path. Shared use of roads is recommended between motorists and cyclists along Power Avenue, Wattle Road, Urquhart Street and Bowler Street with surface markings and continuity markers designating shared use and for wayfinding purposes.</p> <p>The path would continue off-road through Fritsch Holzer Park connecting with Harold Street (Item 6) or an alternative in Mayston Street. It is important to design an intuitive link into Fritsch Holzer Park at the north-eastern entrance, west of Harold Street. Land has previously been set aside for this purpose. Dropped kerbs and signage will be required. Cyclists heading west from Harold Street will require advance stop lines at this intersection with signage informing cyclists and motorists of the bicycle access into the park.</p> <p>The shared use of carriageway is recommended between motorists and cyclists along Prospect Hill Road with surface markings and continuity markers designating shared use and for ayfinding purposes.</p>	   	High	\$700,000
60	Site Visit Mel: 45 A11 to A10	<p><u>Yarra Street to Hawthorn Station</u></p> <p>Upgrade existing footpath between Yarra Street and Hawthorn Station to cater for cyclists.</p> <p>Runs parallel to train line on the south side.</p>	<p>The existing pedestrian path between Yarra Street and Hawthorn Station is narrow and is tightly bounded by the train tracks and residential properties.</p> <p>Widening of this route would be costly and is not recommended given the low usage by cyclists. Pedestrian numbers though, tend to be relatively high.</p>	<p>Maintenance of the path is recommended.</p> <p>Provide adequate maintenance program - pavement, clearing/trimming of overhanging vegetation from private property and railway reserve.</p>	 	Medium	N/A
61	BV Consultation Mel: 32 B11	<p><u>Route along Bulleen Road</u></p> <p>A bicycle connection from Bulleen Rd across the Eastern Freeway would be beneficial, but would require discussion with the City of Manningham.</p>	<p>Scope exists to introduce on-road cycle lanes through the Bulleen Road/Eastern Freeway intersection. No cycle route evident to the northern side of this intersection and within the City of Manningham.</p> <p>Proposal currently being developed in conjunction with VicRoads and the Cities of Manningham and Boroondara for on road bicycle lanes. In the Boroondara section it is proposed to provide shared paths on the verge which would require new footpath construction and minor acquisition of up to a 1m strip along the golf course. Noted that the existing footpath on the west side ends mid way along the golf course.</p>	<p>Progress on road bicycle lanes and shared path proposals with VicRoads and the City of Manningham.</p>	  	Medium	Further investigation required
62	Existing Conditions Map Site Visits Mel: 45 K6 to 46 K6	<p><u>East West link between Burke Road and Strabane Avenue</u></p> <p>East West link between the Anniversary Trail at Burke Road and the existing off-road path at Strabane Avenue in the City of Whitehorse.</p> <p>This route commences at the Anniversary Trail at Burke Road and along Gordon Street to Balwyn Road. It crosses Balwyn Road and continues along Yarrbat Avenue until Union Road, then onto Strabane Avenue and the existing off-road pathway.</p>	<p>Gordon Street is currently an informal cycle route offering easy access onto the Anniversary Trail. The street has traffic calming in the form of roundabouts, splitter island and a slow point.</p> <p>There is no crossing at the Gordon St / Balwyn Rd / Yarrbat Av intersection, although this section of Balwyn Road does offer on-road cycle lanes.</p> <p>Yarrbat Avenue is a local road extending between Balwyn Road and Union Road. There are a number of roundabouts as well as a narrowed curve mid-section.</p> <p>Located on Yarrbat Avenue are the Maranoa Gardens and Beckett Park.</p>	<p>Formalise the Gordon Street and Yarrbat Avenue cycle route as a shared on road route with wayfinding signage/markers.</p> <p>Introduce a signalised road crossing of Balwyn Road, adjacent to Yarrbat Avenue / Gordon Street.</p> <p>Union Road is already provided with on road bicycle lanes.</p> <p>Formalise the Strabane Avenue section as a shared on road route with wayfinding signage/markers.</p>		Low	\$250,000

63	Vic Roads Site Visit Mel: 46 D8 to B12	<p><u>Balwyn Road link to Anniversay Trail</u></p> <p>This recommendation involves providing a link from Balwyn Road (at the intersection with Whitehorse Road), passing along Balwyn Road, heading through Canterbury Gardens and connecting to Canterbury Station with potential to also link to the Anniversay Trail.</p>	<p>The section of Balwyn Road between Whitehorse Road and Canterbury Road includes a small hill, and therefore may not be preferred by occasional cyclists. However, this link could provide a useful connection and is considered to be of high priority.</p> <p>Balwyn Road narrows south of Whitehorse Road, width permits two way traffic and cycle lanes if no parking occurs.</p> <p>Off-road reserves provide an opportunity to link Balwyn Road with the Anniversay Trail and Canterbury Station with a short on-road section at Warburton Road and use of Warburton Road Reserve.</p> <p>VicRoads has indicated strong support for completing the bike lanes along Balwyn Road.</p>	<p>Provide 1.5 metre wide cycle lanes on Balwyn Road from Whitehorse Road to Canterbury Road. Replace 3 tray wide bluestone channel at kerbed locations with single tray bluestone channel. This proposal will allow for cycle lanes with parking permitted. As parking activity is low, this will not impact significantly to the operation of the bike lanes.</p> <p>Improve Canterbury Road and Balwyn Road intersection providing opportunities for cyclists to safely cross to Canterbury Gardens.</p> <p>Link cycle path through from Canterbury Gardens to Canterbury Station and south west to the Anniversay Trail through Chaucer Crescent Reserve or on road in Kendall Street, short on road section of Warburton Road and use of Warburton Road Reserve to Matlock Street and the Anniversay Trail.</p>	   	Medium	\$700,000
64	Existing Conditions Map Design Cycle 1996 Feasibility Study Mel: 45 B10 to 46 A11	<p><u>Eastern Rail Trail</u></p> <p>From Power Street to East Camberwell Station, an east-west connection.</p> <p>It is proposed to achieve this route through use of existing trails and closing gaps.</p>	<p>This route can be summarised in three sections:</p> <p>A link from Power Street, through Grace Park and along Hilda Crescent and Linda Crescent to Glenferrie Road completes the west section. This section is largely off-road, and is currently used as an informal route. An existing gravel path runs from Power Street through Grace Park to Hilda Crescent.</p> <p>The central section runs between Glenferrie Road and Burke Road - either via Burwood Road, or via Wakefield Street, Allen Street and Victoria Road. This route will be an on-road informal route with signage to inform all road users that this is an intended bicycle route.</p> <p>The east section runs from Burke Road to East Camberwell Station and the Anniversay Trail, and combines Items 2 and 29.</p>	<p>The Grace Park Masterplan and the Glenferrie Structure Plan will provide the framework for the shared path network between Power Street and Glenferrie Road including connections along L E Bray Reserve. Implement recommended bicycle path works as detailed in report.</p> <p>Develop and implement proposals for the central and eastern section to provide link to East Camberwell Station. Combination of on and off road facilities likely.</p> <p>Forms part of Eastern Rail Trail. Investigate, develop and progress Eastern Rail Trail initiatives to provide a continuous east west route in line with objectives of report to provide a link parallel to the railway line through the Cities of Boroondara and Whitehorse.</p> <p>This combines items 2 and 29, which could combine to form a high quality route.</p> <p>Vic Track requirements may restrict sections of the path.</p>		Medium	<p>Short Term: \$30,000 to \$40,000</p> <p>Long Term: \$50,000 to \$60,000</p>
65	Stakeholder and Community Consultation Mel: 45 G12	<p><u>Camberwell Junction</u></p> <p>Camberwell Junction is unsafe for cyclists.</p>	<p>On-road cycle counts indicate that the intersection is well used by cyclists with approximately 40 cyclists using the intersection during peak hour periods (75 cyclists over a 2 hour period in the AM and 122 cyclists over a 3 hour period in the PM).</p> <p>The greatest cluster of crashes throughout Boroondara occurs at and immediately surrounding the Camberwell intersection (7 reported crashes occurred at this location over a 5 year period).</p> <p>These is significant demand from all road users at this intersection including pedestrians, cyclists, trams and motorised vehicles negotiating the 6 leg intersection.</p> <p>Advanced stop lines are located on a number of approaches, however, these are often ignored by motorists.</p> <p>Right turn movements are all banned at the intersection.</p>	<p>It is recommended to improve the clarity and prominence of the lane markings at this intersection with coloured surfacing at advanced stop lines and possibly through the intersection.</p> <p>A detailed assessment of signal operation and vehicle movements is required to identify physical and operational measures that may improve the intersection for cyclists.</p> <p>Develop detailed proposals to improve the level of safety and access for cyclists, including improved markings, possibility to trial bicycle queue jump lanes and improvements to traditional wide kerbside lanes.</p>	 	High	N/A
66	Council Consultation Mel: 60 B4 to 60 A9	<p><u>Glen Iris Road</u></p> <p>Provide exclusive cycle lanes along Glen Iris Road between Camberwell Road and High Street.</p>	<p>This section of Glen Iris Road has the potential to provide an important bicycle link between the Gardiners Creek Trail, the Ferndale Trail, the Anniversay Trail and to a substantial residential catchment area.</p>	<p>Provide exclusive bicycle lanes on Glen Iris Road between Camberwell Road and High Street, maintaining the existing parking. Very little parking occurs on Glen Iris Road and the proposed cycle lanes would be similar to those provided on Mont Albert Road.</p>		High	\$50,000

67	BBUG	<u>Mont Albert Road to Canterbury Road via Chatham Road and Shierlaw Avenue</u>	<p>Chatham Road and Shierlaw Avenue are currently being used by cyclists to access Mon Albert Road and Canterbury Road.</p> <p>Good access to Canterbury Railway Station and Maling Road Shopping Precinct.</p> <p>Some parking occurs either side of the road,</p> <p>Road width does not permit bicycle lanes.</p>	<p>Upgrading link and include directional signage. Provide shared use bicycle symbols to carriageway surface.</p> <p>Examine and review crossing facilities across Canterbury Road.</p> <p>Progress initiatives accordingly.</p>		Low	Further investigation required
68	BBUG Existing Network Plan (facility not determined)	<u>Seymour Grove, Trafalgar Road and Stanhope Grove.</u>	<p>BBUG indicate advantage of bicycle lane provision along Seymour Grove, Trafalgar Road and Stanhope Grove.</p> <p>Existing arrangement includes parking to both sides of the carriageway. If parking were provided on only one side, there is an opportunity to introduce on-road bicycle lanes.</p>	<p>Investigate opportunities for bicycle lanes along Seymour Grove, Trafalgar Road and Stanhope Grove.</p> <p>Review parking demand during evening periods in particular.</p> <p>Investigate, progress and implement recommendations of review.</p>		Medium	Further investigation required
69	Council Consultation Mel: 45 3E	<u>Kilby Rd connection between Main Yarra Trail to Anniversary Trail via Hyde Park</u>	<p>Poor connection between Hyde Park and underpass through to Kew Billabong.</p> <p>Legibility of route and connection between trails very poor.</p>	<p>It is recommended that paths are aligned to connect at a suitable crossing point along Kilby Road.</p> <p>A two stage crossing with central island should be sought at the very least. Warning signs should be installed to clearly indicate to motorists that the trail crosses which should also serve to advertise the route.</p> <p>Following the completion of the Darebin Creek connection, the site should be reviewed to ensure that crossing facilities continue to be adequate.</p>		High	\$30,000 - \$40,000
70	Bicycle Victoria	<u>Mont Albert Road Bike Lane Missing Section</u>	<p>There is a small section of Mont Albert Road between Union Road and York Street (180m) that needs to be completed to complement the section west of Union Road and the section within the City of Whitehorse.</p> <p>Road width is an issue and cars were observed parked which narrows the road further.</p>	<p>Complete missing section of on road bike lane in Mont Albert Road between Union Road and York Street (180m).</p> <p>Should on-road bicycle lanes not be feasible, shared use markings involving a bicycle marking to the carriageway should be provided to ensure continuity and legibility of the Mount Albert Road corridor.</p>		High	\$5,000


71	BBUG	<u>Tooronga Road On Road Bike Lane at Stockland Development</u>	There is a need to link the Stockland Development to Tooronga Road and provide an on road bike lane in a southerly direction to link in with the existing on road bike lane.	<p>Complete missing section of on road bike lane from Stockland Development to existing southbound on road bike lane at Tooronga Road overpass.</p> <p>Part of the missing link could be developed as part of any road alterations associated with the Stockland Development.</p> <p>Further investigation and discussions are required.</p>		High	Further investigation required including discussion with Stockland Development and associated proposals.
72	Council Officers	<u>Camberwell Road west of Burke Road</u>	Current bluestone channel in sections creates difficulties and renders use of far side of kerbside lane ineffective.	Replace bluestone channel with conventional concrete channel, consistent with the remainder of Camberwell Road.		Low	\$30,000
73	Council Officers	<u>Tooronga Road Bike Lanes North of Toorak Road</u>	High levels of traffic and parking congestion in Tooronga Road associated with parents dropping off and collecting students from Bialik College affecting use of on road bike lanes.	Examine strategies to improve traffic flow and remove parking congestion from Tooronga Road including possibility of banning the right turn into the College.		Medium	\$10,000
74	Council Officers	<u>Mont Albert Road east of Balwyn Road</u>	Road narrows on approach to Rochester Road leading to a pinch point for cyclists and motorists.	Develop strategies to improve access for cyclists between Mont Albert Road and east of Rochester Road.		Medium	Dependent on Strategy

Table 6: General Recommendations in Boroondara

General Options				
Item No.	Source & Melways Reference	Issue	Description	Recommendation
G1	Community Consultation	<u>Provide and improve directional signage for off road trails.</u>	Signage is often located inconsistently and is lacking in continuity. Many sections of trail are without any form of signage.	Develop and implement comprehensive a signage strategy for all trails. Incorporate VicRoads' new guidelines which are due to be released in short term. Consider introduction of location and directional signage. Provide more comprehensive and continuous directional and informative signage.
G2	Community Consultation	<u>Provide and improve information signage for the control of dogs at off road trails.</u>	Need for additional, improved and consistent signage.	Develop and implement comprehensive signage strategy for all trails.
G3	Community Consultation	<u>New Safety Initiatives</u>	Advocate and develop new initiatives to improve off road trails, including initiatives to improve the level of safety for pedestrians and cyclists through the use of separate paths, new signs, use of coloured surface treatments and lighting.	
G4		<u>Vegetation Maintenance Program</u>	Develop and implement a comprehensive vegetation maintenance program along off road paths, including removal/trimming of vegetation at designated crossing locations.	

G5	ITS	<u>Improve Maintenance of Cycling and Pedestrian Infrastructure</u>	<p>Council to review its footpath maintenance program to ensure that poor maintenance of pathways is not a deterrent to people cycling/walking.</p> <p>Increase community awareness regarding the raising of issues, potential hazards through Council's web site.</p>	
G6	ITS	<u>Develop Priorities for Off Road Path Development</u>	<p>Collate and prioritise the outstanding treatments from audits of the shared path network (Anniversary Trail, Gardiner's Creek Trail, Main Yarra Trail and Koonung Creek Trail).</p>	<p>Main actions to include: Widening of shared paths to a minimum width of 2.5m. Centreline marking and stop lines at crossings. Centreline marking at bends and where visibility is restricted. Line marking where paths meet to clearly define which path has priority.</p>
G7	ITS	<u>Introduce Shared Path Centre Line Marking and User Conduct.</u>	<p>Introduce centre line marking and signage for all shared pathways to reduce conflict between cyclists and pedestrians.</p> <p>Increase awareness and understanding between users of shared paths by providing Shared Path User Codes notices.</p>	
G8	RSS	<u>Upgrade of Existing Shared Path Network</u>	<p>Investigate and implement upgrading of the existing shared path network, including the feasibility of widening sections of existing paths to a minimum of 3.0m. Consider creation of separate paths for cyclists and pedestrians and/or consider one path incorporating separate sections for pedestrians and cyclists for paths with high levels of commuter cycling eg. sections of the Gardiners Creek Trail.</p>	

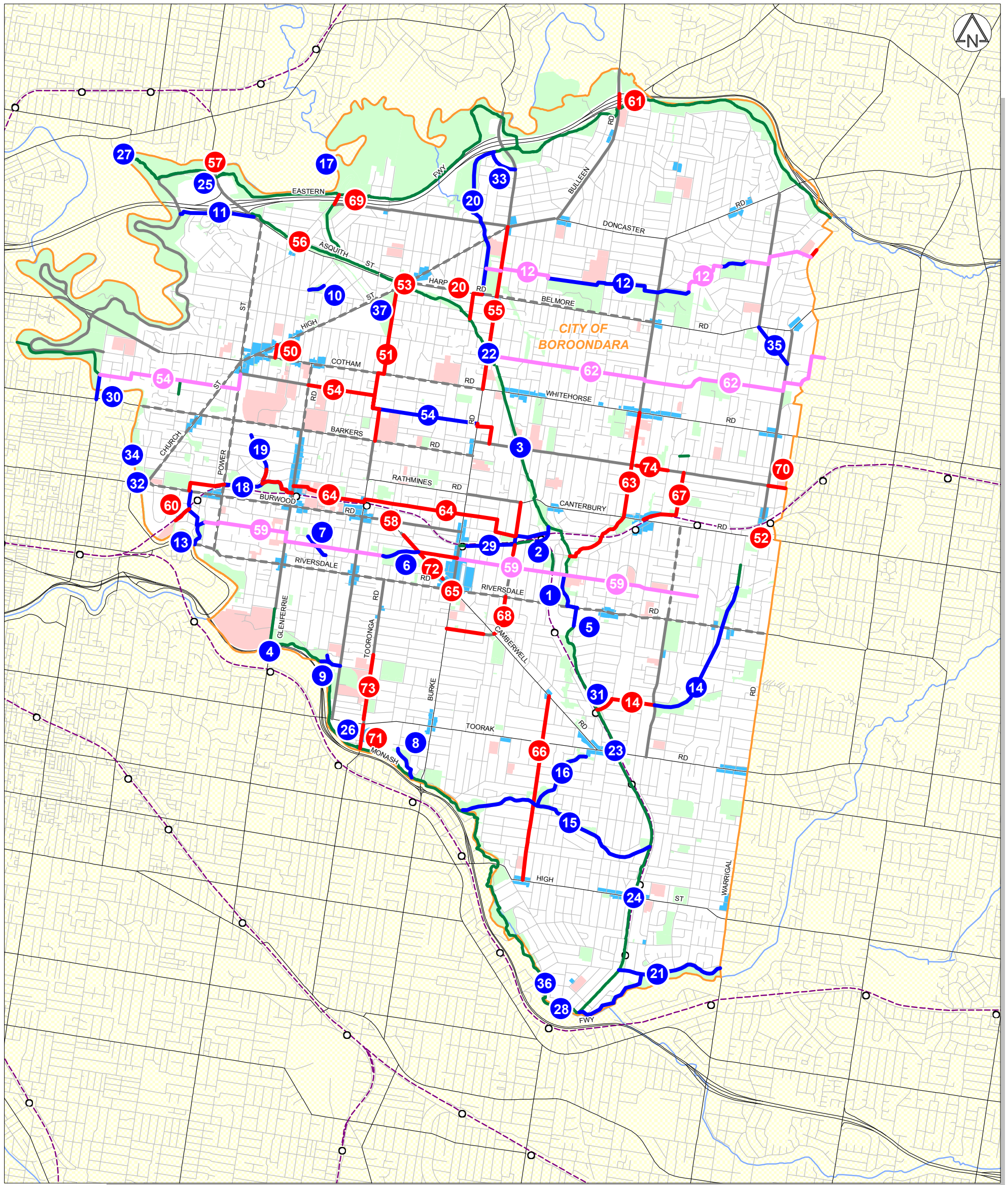
G9	RSS / ITS	<u>Lighting</u>	<p>Lighting of shared paths (at selected locations to address site specific safety issues – narrowings, bends, low visibility, significant gradients, etc).</p> <p>Lighting of popular shared paths is a priority, such as those used for commuting purposes at regular intervals (i.e. Gardiners Creek Trail).</p>	
G10	RSS	<u>Safety Audits</u>	<p>Conduct safety audits of shared pedestrian and bicycle facilities on a 2-3 year cycle (particularly around priority locations such as schools, universities, activity centres, elderly citizen centres, retirement villages, recreational areas etc).</p>	
G11	ITS	<u>Walking Initiatives</u>	<p>Encourage and support walking as a viable means of transport and as a healthy activity.</p>	<p>Ensure there are enough seats and shelters for comfortable resting spots on routes likely to be walked by older people.</p>
G12	Council Officers	<u>Bridge Crossings</u>	<p>Review existing bridge crossings and develop improvement strategies.</p>	<p>Review existing bridge crossings including lighting, linemarking, approach visibility, flaring approaches at ends and removal/trimming of vegetation.</p> <p>Review width and examine suitability of upgrade as part of long term plan.</p>

G13	Council Officers	<u>Anniversary Trail Crossings</u>	The Anniversary Trail crosses a number of roads where the provision of crossing facilities would improve the level of safety and enhance access.	<p>Investigate suitability and provide crossings (raised zebra crossings, zebra crossings, centre of the road refuges, pedestrian signals, kerb outstands etc) at crossing locations including:</p> <p>Ryburne Avenue Laurel Street Link Elaroo Avenue Prospect Hill Road Matlock Street Abercrombie Street Argyle Road Normanby Road Belford Road Park Crescent Willsmere Road</p>
G14	BBUG	<u>East West Routes</u>	<p>Clear need to improve east west links.</p> <p>Detailed investigation into the following potential routes is recommended. The analysis will provide the detail as to the level of bicycle facilities that could be provided and may involve a variation to the general routes listed below.</p> <p>Route #1: Victoria Road, Auburn Rd, Malmsbury Street, Central Gardens, Park Street through to Glenferrie Road, Linda Crescent, Grace Park to Power St, Lennox Street, Barton St to Burwood Road.</p> <p>Route #2: Broadway, Cookson Street, Burke Road, Mayston Street, Camberwell Rd, Gordon St, Roseberry St, Bowler St, The Boulevard, Marian St, Kooyongkoot Rd though to Gardiners Creek Trail and the City.</p> <p>Route #3: Prospect Hill Rd, Harold Street, Fritsch Holzer Park, Bowler St, across Auburn Rd to Urquhart St, Across Glenferrie Rd Wattle Rd, across Power St to Power Avenue, Morang Rd, Morang Reserve, Yarra Gve, Majore St, railway underpass, Domville Avenue to Burwood Rd.</p>	<p>Undertake detailed investigation into east west routes as listed.</p> <p>Progress and implement routes accordingly.</p>
G15			<p>Upgrade of existing path that runs on the south side of the Railway Reserve between East Camberwell Station to Burke Road. The difficulties and cost implications given proximity of railway embankment and abutting property are noted. Path is an east west path that currently runs to Burke Road immediately south of the Connex car park. With potential relocation of Burke Road pedestrian signals further south, the route could use Auburn Parade and Newport Crescent to the existing on road bike lanes in Burwood Road.</p> <p>Consideration should also be given to links to the following streets:</p> <p>(1) Railway Pde and Fairholm Gve north to provide access between the existing path on the south side of the railway and Prospect Hill Road.</p> <p>(2) Auburn Pde to provide access between Auburn Road and Camberwell Road</p> <p>(3) Butler St, Havelock Rd, Pleasant Rd</p> <p>It is noted that some of the routes are likely to be signed with directional bicycle signage rather than dedicated on road bicycle lanes - however opportunities for dedicated on road bike lanes, shared bicycle parking lanes etc would be investigated as part of the design process.</p>	
G16	<p>Council Consultation</p> <p>Road Safety Strategy</p> <p>Various</p>	<u>Complete PBN</u>	<p>55 km of PBN completed.</p> <p>35 km of PBN outstanding.</p>	<p>Continue to develop proposals for submission to VicRoads to complete the Principal Bicycle Network.</p> <p>Focus on key corridors including Burke Road, Rathmines Road, Doncaster Road east of Bulleen Road and Canterbury Road.</p> <p>Investigate alternative on road options to supplement the PBN on the declared main road network and Council roads and implement accordingly.</p>

G17	Road Safety Strategy		Safety is a major issue with the City of Boroondara ranked first (out of 16 municipalities) in the Melbourne south east metropolitan area for cyclist fatalities and serious injuries. There is a clear need to improve the level of safety for cyclists through more effective and greater provision of facilities, including development of new initiatives/standards.	Provide separate linemarked bicycle lanes or shared parking/bicycle lanes along the arterial road network, where feasible, including continual review of older existing facilities. Provide wide kerbside lanes or more effective bicycle lanes along primary arterial roads where feasible (eg. Princess Street, Denmark Street, Power Street, Toorak Road, Warrigal Road). Install 'Head Start' boxes for cyclists at signalised intersections on the Principle Bicycle Network. Install 'green' bicycle lane markings at critical intersections, diverge movements and left slip lanes. Revisit existing on road facilities with an emphasis on improvement.
	Council Consultation	<u>Bicycle Safety on Arterial Roads</u>		
G18	Area Wide		Safety is a major issue with the City of Boroondara ranked first of 16 municipalities in the Melbourne south east metropolitan area for cyclist fatalities and serious injuries. Clear need to improve the level of safety for cyclists through more effective and greater provision of facilities, including development of new initiatives/standards. Review of wide kerbside lanes, trials of bicycle queue jump lanes to provide good access to intersections, use of more coloured surface treatments, review of markings, treatments at cross or tee intersections recommended.	Advocate for and develop potential new guidelines/standards to improve the effectiveness and safety of wide kerbside lanes. Review of wide kerbside lanes, trials of bicycle queue jump lanes to provide good access to intersections, use of more coloured surface treatments, review of markings, treatments at cross or tee intersections recommended.
		<u>New Standards / Guidelines</u>		
G19			As distinct to main roads, safety also extends to include Council Roads (major roads and collector roads). Provision of dedicated on road facilities on higher order Council roads would assist in improving safety and complementing the PBN.	Provide linemarked separate/shared parking/bicycle lanes along Council roads, where possible (eg. Prospect Hill Road, Sackville Street, Parkhill Road, Gordon Street, Rathmines Road, Glen Iris Road, Summerhill Road, Belford Road, Willsmere Road between Princess Street and Hyde Park, Wrixon Street, Parkhill Road, Cookson Street, Pakington Street, Adeney Avenue etc).
		<u>Bicycle Safety on Council Roads</u> (Major Roads and Collector Roads)		
G20	ITS		Closing the gaps or completing missing links along key routes which span municipalities can significantly increase level of use by providing continuity and an improved level of safety.	Improve regional bicycle routes - include connections to surrounding municipalities of Darebin, Banyule, Manningham, Stonnington and Monash. Continue Implementation of Principal Bicycle Network - the priority routes should be those connecting to schools, universities, urban centres and shared pathways and routes where there is a high occurrence of casualty crashes involving cyclists. Continue to investigate and develop additional on and off road bicycle routes.
	Council Consultation	<u>Regional Bicycle Routes</u>		
	Area Wide			

G21	ITS Council Consultation Area Wide	<u>Develop Local Cycle Routes</u>	Develop routes on local roads which complement the PBN and existing shared paths.	Develop routes on local roads which complement the PBN and existing shared paths. Routes which provide good, direct connectivity between schools, universities, activity centres and shared pathways should be prioritised in addition to routes which would provide an alternative to an arterial road route which has a high cyclist casualty crash record.
G22	ITS Council Consultation Area Wide	<u>Investigate Cyclist Crash Locations for Improved Safety</u>	Safety is a major issue with the City of Boroondara ranked first of 16 municipalities in the Melbourne south east metropolitan area for cyclist fatalities and serious injuries. Clear need to improve the level of safety for cyclists through more effective and greater provision of facilities, including development of new initiatives/standards.	Identify cyclist crash locations and develop measures to improve safety. Apply for blackspot funding, where appropriate. Assess and examine high accident locations as a priority.
G23	Road Safety Strategy BBUG	<u>Ensure LATM's Cater Adequately for Cyclists</u>	Traffic treatments can create difficulties for cyclists. Provision of a checklist to examine potential impacts on cyclists and specific provision for cyclists during the design process would minimise adverse impacts and provide an opportunity for good access for cyclists. Restricted road geometry can limit opportunities.	Implement procedures to ensure the preparation of LATM's are designed to give adequate consideration to cyclists' needs. Make use of latest standards, including Bicycle Victoria guidance notes on this topic. Review existing traffic calming installations and audit for safety, suitability and need for cycle bypasses as influenced traffic volumes, car speed, gradients, speed differentials. Develop priority program given that there are in excess of 1000 traffic treatments
G24	Community Consultation	<u>Yarra Boulevard</u>	Current pavement has deteriorated and is very rough. Known as the "cheese grater" and has been known to slice tyres given its roughness. Yarra Boulevard is incredibly popular as a training circuit with clubs and competitive cyclists. Yarra Boulevard is defined as a "Tourist Road" under the responsibility of VicRoads.	Advocate for improvements to the road pavement for Yarra Boulevard including new asphalt pavement to provide a smoother and more comfortable ride. Advocate for an associated improved maintenance program. Investigate feasibility of reversing direction at Yarra Boulevard loop to improve safety and advocate as necessary.

G25	Community Consultation	<u>Maintenance</u>	Need for comprehensive maintenance program for the on road network for roads under the control of both VicRoads and Council.	Advocate for a timely and responsive maintenance program for bike lanes on the declared road network through VicRoads including linemarking, repairs to pavement i.e. pot holes, cracks and reinstatement works. Provide a similar level of service for bike lanes maintained on Council roads.
G26	Community Consultation	<u>Review Cycle and Pedestrian Routes across the Monash and Eastern Freeways</u>	Freeways can be effective barriers in limiting access. Investigate current underpasses or overpasses and potential new links to these access points.	Undertake investigations as to how these routes should be improved or introduced particularly to access railway stations on the Glen Waverley line. Investigate new links to existing underpasses or overpasses.
G27	ITS, BV	<u>School Precincts</u>	Develop travel solutions for school precincts (eg shuttle buses to stations, school bus services, walking, cycling, use of scooters, car pooling). Improve level of safety on key links to schools to encourage walking and cycling, including new and improved crossings and paths and auditing of routes. Improve links from schools to existing or new shared paths.	
G28	Council Consultation	<u>Drinking and Toilet Facilities</u>	Investigate and provide drinking fountains and toilet facilities along strategic locations on the shared path network	
G29	Council Consultation	<u>Discontinuance of Roads and Reserves</u>		Cycling needs to be considered in the assessment process for the discontinuance of roads and reserves. Examine and progress opportunities, where possible, to reclaim land "fenced" in by abutting property owners along tr corridors.



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Boroondara
City Council

- Existing Wide Kerbside Lane
- Existing On-Road Bike Lane
- Existing Off-Road Path
- On-Road Path Item
- On-Road Shared Carriageway Item
- Off-Road Path Item

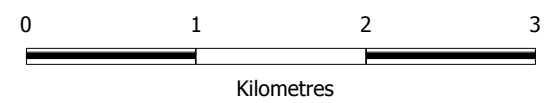
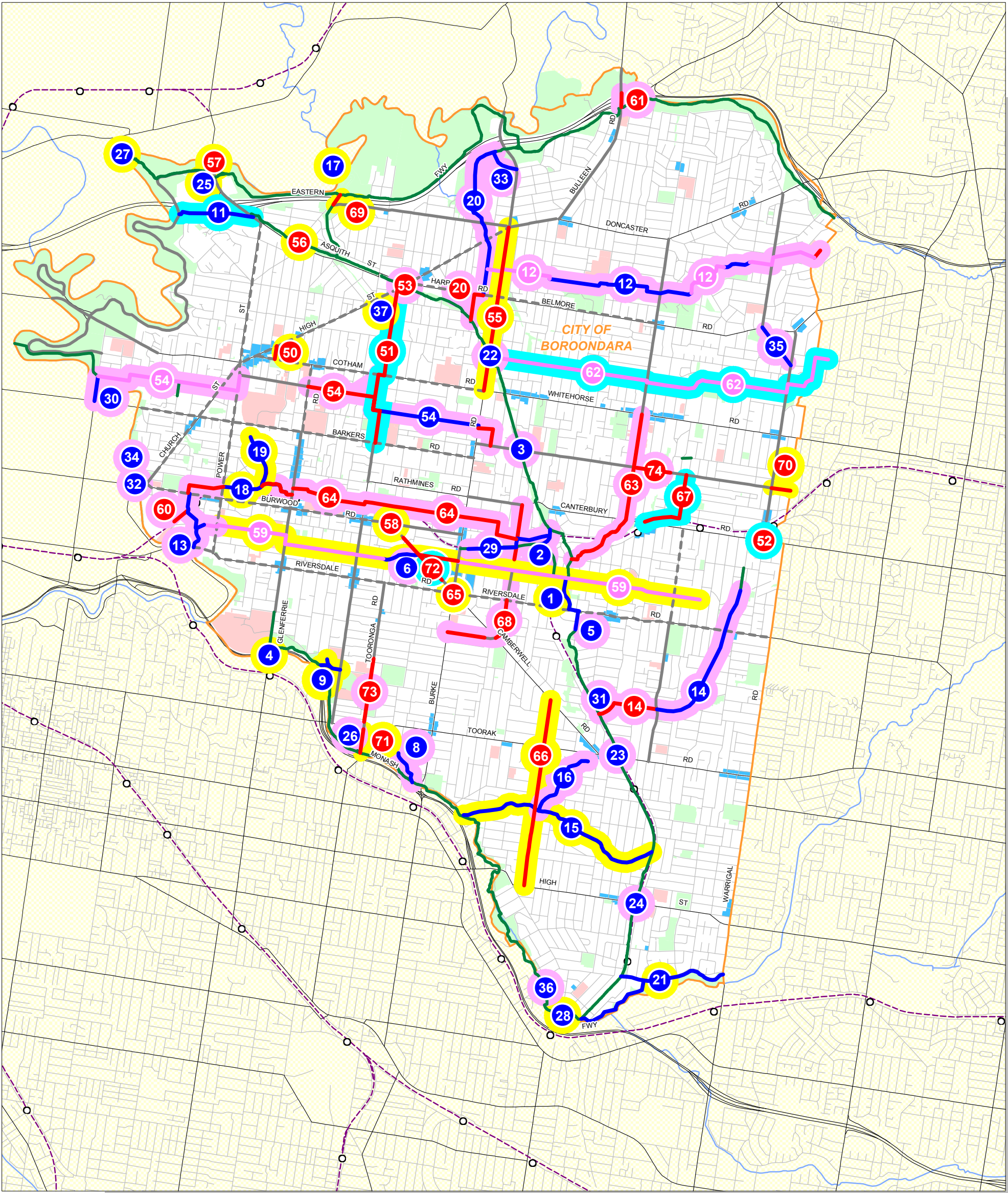


Figure 11:
Item Location Plan

- Schools/Universities/TAFE
- Parks
- Retail Areas
- Hospitals



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Boroondara
City Council

- Existing Wide Kerbside Lane
- Existing On-Road Bike Lane
- Existing Off-Road Path
- On-Road Path Item
- On-Road Shared Carriageway Item
- Off-Road Path Item

- Low Priority
- Medium Priority
- High Priority



Figure 12:
Recommendations

- Schools/Universities/TAFE
- Parks
- Retail Areas
- Hospitals



7.3 Costing

Indicative costs have been developed in consultation with Arup's internal engineering team. The following generic costs provide a foundation for developing costs for recommendations outlined under Section 7.2.

Table 7 - Indicative Costing

Item	Use	Unit	Cost per Unit
ON ROAD INFRASTRUCTURE			
Drop kerb	Bicycle access from roads	kerb	\$ 210
Clearway bicycle lane installation	On-road formal routes	Lin.km.	\$ 8,400
Pavement bicycle symbol	On-road formal routes	symbol	\$ 140
Lighting - lanterns/lamps	Road crossings	lantern	\$ 800
Cutting through speed hump	On-road routes with traffic calming	Per speed hump	\$ 800
Zebra crossing	Road crossing	No.	\$ 10,000
Central Refuge for Pedestrians / Cyclists	Road crossing	No.	\$ 10,000
Dropped kerbing at a crossing point to assist Pedestrians and Cyclists	Road crossing	No.	\$ 1,100
Pedestrian / Cycle crossings - signals	Road crossing	No.	\$ 200k
Advance stop lines for cyclists (Head Start Box)	At on-road signalised intersections	No.	\$ 200
Indented parking bays – kerb/channel Parking bays –surfacing	Increase road width for new on-road cycle lanes	Lin.m.	\$400
OFF-ROAD INFRASTRUCTURE			
Existing shared path widening	Off-road shared paths	Lin.m.	\$ 100
Existing rail/bollard removal	Entry to off-road paths	No.	\$ 200
Fencing	Off-road paths	Lin.m.	\$ 320
Re-surface/re-edge pathway	Off-road paths (3m)	Lin.m.	\$ 130
Shared path construction	New off-road paths	Lin.m.	\$ 250
ALL ROUTES – WAYFINDING			
Signage – Installation	All formal routes	sign	\$ 200 to \$ 500
Signage – Removal	All formal routes	sign	\$ 100
Linemarking	All formal routes	Lin.m.	\$ 10
END OF TRIP FACILITIES			
Bicycle rack (3 to 5 bicycles)	Secure bicycle parking	rack	\$ 600

Item	Use	Unit	Cost per Unit
Bicycle parking rail (stainless steel incl. installation)	Secure bicycle parking	rail	\$ 400
BRIDGES			
Construction – Up to 20m span and 3m width	Bridge construction	Sq.m.	\$3-4,000
Construction – Greater than 20m span and 3m width	Bridge construction	Sq.m.	\$4-5,000

8 Management and Implementation

8.1 Implementation

In order for Council to successfully progress this Strategy, coordination is required between various Council departments and external stakeholders including VicRoads, Parks Victoria, Department of Transport and adjacent councils.

8.1.1 Organising Officer

The organising Council officer for the BBAC (Boroondara Bicycle Advisory Committee) already provides a focal person for cycling issues within the municipality. It is recommended that the role of the organising officer include:

- Initial key point of contact for any cycling issues;
- Progress the implementation of cycling Strategy;
- Identification of maintenance requirements and infrastructure improvements;
- Review of proposed infrastructure and landscaping projects to ensure that cyclists are not compromised;
- Identify opportunities to improve cycling infrastructure as part of commercial, highway or park proposals;
- Promotion of cycling at schools and within the community;
- Identification of funding opportunities and acquisition of funds;
- Ensure that cycling issues are regularly promoted in local newspapers, Council newsletters and updating the Council cycling webpage; and
- Foster a partnership with lobby groups.

8.1.2 Bicycle Advisory Committee (BAC)

Council current convenes a quarterly BBAC meeting with membership of Council, Boroondara Bicycle Users Group, Bicycle Victoria and the community. Cycling issues in the municipality are discussed, as well as upcoming projects and other cycling related matters.

The BBAC should also include VicRoads, Parks Victoria and the Department of Transport. Inter-municipality arrangements and connections would also require the inclusion of representatives from adjacent Council's.

By closely working with the BBAC, it is envisaged that an integrated approach be adopted regarding the overall planning and implementation process of the Bicycle Strategy. The BBAC should continue to serve to:

- Provide a discussion forum whereby cycling related issues can be quickly resolved;
- Keep stakeholders up to date with any cycling issues; and
- Provide an early opportunity to identify new cycling opportunities as part of infrastructure and planning proposals ensuring integration of appropriate facilities and negating the need for future costly retrofits.

Lastly, it is recommended that all members of the BBAC are provided with a copy of the final Bicycle Strategy, are therefore aware of the opportunities and constraints facing cycling in Boroondara, and can consider their role in achieving the Strategy's goals.

8.2 Funding Opportunities

Underpinning the successful implementation of the Bicycle Strategy is the ability to secure adequate funding for physical and social infrastructure improvement initiatives. Although Council is one source of funding, it will have limitations on the amount of capital or operating funding available.

8.2.1 Funding for Boroondara in 2008/2009

Funding for bicycle related projects for 2008/09 is shown in the below.

Table 8 – 2008/2009 Budget

Council Funding	Amount
Bicycle & Pedestrian Trails – Safety Audit Action Plan	\$280,000
Bicycle/Pedestrian Trails – Safety Audit Implementation	\$100,000
Bicycle Strategy Implementation	\$100,000
External Funding	Amount
Department of Transport – Gardiners Creek Trail Markham Avenue link	\$250,000
Parks Victoria - Gardiners Creek/Anniversary Trail link to Warrigal Road	\$250,000
VicRoads – Warrigal Road underpass and Connecting Bridge (design only)	\$60,000

8.2.2 Future Funding

A variety of funding sources to assist in the development and expansion of bicycle facilities within Boroondara have been identified. These have been summarised in the following table.

Table 9- Possible Funding Sources (other than Council)

Potential Funding Sources	Additional Information	Amount
Federal Government		
Federal Government & Victorian Government	Bike Lockers at stations throughout Victoria.	\$516k
Victorian Government		
VicRoads	<u>PBN Funding:</u> VicRoads will consider 100% funding for VicRoads roads, or 50/ 50 with Council on local roads. See Section 8.2.3 for more details.	\$10 million per year for metropolitan Melbourne
Parks Victoria (Department of Planning and Community Development – DPCD)	Generally responsible for the development of many off-road paths on the metropolitan trail network (MTN). Parks Victoria will consider dollar for dollar matching funding to local Councils for the construction of off-road paths that meet its program guidelines. The Grants Program funding is usually allocated to 10 to 15 projects per year.	Approx. \$1.2 million per year for metropolitan Melbourne

Potential Funding Sources	Additional Information	Amount
Department of Transport (DOT)	<p><u>Local Area Access Program (LAAP)</u></p> <p>Suitable for projects that provide a link to a Railway Station or a major intersection, or to fund end of trip bicycle storage facilities at Railway Stations, shopping centres, schools etc. The LAAP can be combined with a TravelSmart program.</p> <p><u>TravelSmart</u></p> <p>Funding towards a 3 year travel behavioural change project.</p> <p><u>Connecting Transport Services Program (CTSP)</u></p> <p>Can be used for installation of bicycle facilities at Railway Stations, such as storage lockers.</p>	<p>LAAP - \$4million per year</p> <p>TravelSmart - \$100k(inc GST) per organisation</p> <p>CTSP – \$20 million per year</p>
Sports & Recreation Victoria (SRV)	<p>SRV is a government body that aims to increase the involvement of the Victorian community in sport & recreation. A wide variety of projects will be considered for funding (the deadline is normally December) including:</p> <ul style="list-style-type: none"> • address gaps in facility provision identified through the strategic planning process; • are consistent with existing strategic priorities for the area; • broaden community access & increase or maintain opportunities for participation; • improve access to those groups traditionally disadvantaged in access to sport & recreation facilities; • increase the range of users of a facility; • are planned in self contained stages. <p>Only one project is adopted per municipality per year, and would therefore suit a major project.</p>	<p>Council can apply for funding of major projects with a total value of over \$200,000, with a maximum grant of \$60,000 and they will fund 50%.</p>
Other		
Private Developers	All new developments should include provision for cyclists. In this way bicycle facilities can be incorporated in the overall development in the initial stages and not added at a later stage on an add-hoc basis.	Unknown
Sporting Organisation Grants	Council supporting grants from major sporting organisations at State or National Association level, e.g. through Bicycle Victoria or elite level sporting groups.	Unknown
Local Amenities Providers/ Operators	There may be scope to obtain some funding from Sports Centres; and for improved bicycle access to their amenities, as this will reduce their need for car parking provision.	Unknown
Universities and Schools for local projects	Cycle parking at schools and university could be jointly funded. Letters addressed to schools, particularly those along cycling corridors, would invite a school to apply for joint funding of cycle	Unknown

Potential Funding Sources	Additional Information	Amount
	parking stands and shelter.	
Bicycle Victoria	Bicycle Victoria will not provide direct funding for projects, but will assist with promotion of new initiatives, and are a strong and valuable lobbying group.	NA

8.2.3 VicRoads Funding Guidelines

VicRoads has primary responsibility for managing the development, funding, and implementation of bicycle facilities on the Principle Bicycle network. Consequently, VicRoads has published guidelines regarding the funding of bicycle facilities on the PBN. Council may play an advocacy role to VicRoads to ensure adequate facilities are being provided.

VicRoads will consider providing 100% of the funds to local Councils for constructing on-road bicycle facilities on the PBN and 100% of the funds for off-road bicycle facilities within the road reservation of a freeway, highway, Tourist Road or Main Road on the PBN, subject to the following guidelines:

- Off-road bicycle paths are usually constructed when it is not feasible to provide on-road facilities, and the off-road path will deliver a level of service equal to what would have been provided on-road;
- The local council should be actively implementing a strategic bicycle plan;
- Council should also be implementing the on-road component of the PBN in a coherent manner;
- Proposals that propose extensions to local bicycle paths and on-road bicycle lanes that connect to the PBN; and
- Incorporation of shared bicycle / pedestrian paths in new suburban developments and whenever major road upgrading or freeway construction works occur.

The funding of bicycle projects other than those meeting the above criteria would be assessed on their merits. However, there is a low expectation that funding would be available for such projects.

8.2.4 Commercial Developments

It is recommended that Council pursues any opportunities to secure funding from commercial developments, for example the proposed Tooronga Village. Cycling infrastructure may be upgraded or reconstructed in the immediate vicinity of the development providing safe and secure cycling opportunities and links with existing cycling infrastructure. The gap in cycle lanes to the southern side of Tooronga Road could be addressed through infrastructure that is required to accommodate the development.

8.3 Maintenance

The existing off-road network extends over 32 kilometres. Maintenance is carried out as part of the safety audit implementation budget. In the order of \$250k is annually allocated to cover a broad range of issues. The audits provide an important instrument in identifying the maintenance requirements of the existing off-road network.

During 2003/04, safety audits were conducted on the Main Yarra Trail, the Anniversary Trail and the Koonung Trail. These audits outlined a significant amount of maintenance work required over a five year period. Approximately, \$1.7 million in maintenance continues to be

outstanding along these trails. Much of the maintenance requirements involve the reconstruction of paths.

An audit of the Gardiners Creek Trail was also completed in late 2007. New safety audits of the Main Yarra Trail and Koonung Trail are due to be completed by late 2008.

The audits clearly outline that existing maintenance funding is not sufficient and falls significantly short.

The lack of a maintenance program potentially exposes Council to liability issues and claims. Accordingly, it is recommended that the bicycle network maintenance should be considered under the Road Management Plan for Boroondara.

Key maintenance activities include:

- Reconstruction of paths to 3m;
- Replacement of signs and surface markings including removal of graffiti;
- Removal/ relocation of street furniture where this obstructs paths or obscures sight;
- Trimming overhanging vegetation;
- Clearing pathways and bicycle lanes of loose material;
- Adjustment of utility frames and covers in the carriageway and potholes;
- Re-surfacing of uneven/ broken pavement; and
- Removal of carriageway bluestone channels where this interferes with on-road routes.

8.4 Monitoring

An important aspect of the Strategy is to monitor cyclist numbers and crashes, particularly following the implementation of new facilities. Monitoring provides a powerful tool that measures the success of cycling infrastructure providing grounds for future funding and further improvements. Monitoring includes:

- Census Data (journey to work);
- VicRoads CrashStats;
- Household Surveys;
- VicRoads counter loop data;
- Manual cycling counts (annual);
- Cycle Parking Counts (annual);
- Bicycle Victoria 'Hands Up' survey program;
- Survey cyclists to obtain feedback on new facilities and initiatives; and
- Increase in length of cycle lanes/paths each year.

Lastly, the monitoring program should include a list of annual targets that could be used to identify and measure any progress and growth in cycling numbers across Boroondara.

9 Promotion and Education Recommendations

Promoting cycling is integral to raising the community's awareness of cycling, and of improving the perception of cycling in general. The recommendations have been evaluated based on effectiveness and value, and given a priority. All are ongoing long term recommendations.

This section presents a set of recommendations which aim to:

- Educate and raise awareness of all road users as to the needs and presence of cyclists; and
- Promote the Boroondara on and off-road bicycle network to the wider community and visitors.

Table 10 – Promotion and Education Recommendations

Program/ Activity	Target Group	Details	Responsibility	Priority
1 - Awareness and Education Campaigns for Schools				
Safe cycling to schools	Students	<p>Safe Cycling campaigns consist of school wide activities that can be very effective at educating students on safe cycling, and of the workings and maintenance of their bicycles.</p> <p>VicRoads offer a number of information packages targeted at different age groups that can assist and direct the teaching of safe cycling to students of all age.</p> <p>Road Smart is a traffic safety education program aimed at students aged 5-12 that teaches children to walk, play and travel safely.</p> <p>Bicycle Ed is a bicycle education campaign approved by the government for children aged 9-13, and includes sections covering all aspects of safe cycling; educating children of the components that make up a bicycle, and of how to be a safe road user.</p> <p>Cycle On (now out of print, but some schools may have the booklets) is the follow up package to Bicycle-Ed. It is aimed at Years 7 to 10 and is designed to increase students' cycling skills, their knowledge of the road rules and their ability to make responsible decisions in the traffic environment.</p> <p>Refer to http://www.vicroads.vic.gov.au for further details of these programs. Current legislation permits children under the age of 12 to ride on footpaths within the municipality.</p> <p>Incorporate scooters in education programs, where appropriate.</p>	<p>While this is obviously beneficial to students, Council should support the development of the road safety/ bicycle education program through to secondary schools.</p> <p>Council should liaise with VicRoads and schools to implement these programs.</p> <p>Council should also work together with all local schools (all schools can benefit), to work together to promote cycling and to tailor the Safe Routes to Schools (SRTS) program to suit the needs of each individual school that undertakes the program.</p>	High

Program/ Activity	Target Group	Details	Responsibility	Priority
1 - Awareness and Education Campaigns for Schools				
Safe cycling to schools	Students	<p>Safe Routes to Schools (SRTS) is a program that aims to reduce school related pedestrian and cyclist crashes by using a combination of advocacy, education, behavioural change and engineering measures. The aim of SRTS is to provide a safer environment for children on their way to and from school and to encourage children to walk and or cycle to school to decrease traffic congestion surrounding schools during drop off/pick up periods. More information can be found on the following website http://www.travelsmart.gov.au and search for Safe Routes to Schools then follow the links.</p> <p>Council to seek expressions of interest from schools wishing to participate in any educational program.</p> <p>Given that some schools have not been receptive to partaking in such programs in the past, the following additional recommendations are proposed. All will require Council to contact the schools and commence discussions:</p> <ul style="list-style-type: none"> • Training Days for school kids to teach safe cycling; • Sponsored cycles for schools; • More & better bicycle racks/sheds at schools; • Encourage parents to ride with the kids; • Critical mass: encourage cycling with friends in a group; • Encourage bicycle shops to offer discounts to schools, match a shop with a local school, and advertise in a school newsletter. <p>Council should seek to achieve joint funding agreements between Council and Schools for the provision of new facilities at the schools.</p> <p>Ride to School is a targeted travel behaviour change program run by Bicycle Victoria with the intention of 'increasing the number of students riding and walking to school'. The program consists of five components covering a range of measures, including surveys, events, and riding skills education.</p> <p>Council's Get2School Cool Challenge also involves encouraging cycling of students to school, in a safe manner.</p>	<p>Council should liaise with schools and local bicycle shops.</p> <p>Council and Bicycle Victoria to work together to implement the Ride to School program.</p> <p>Council to promote initiatives on website, monthly newsletters, local press etc.</p>	High

Program/ Activity	Target Group	Details	Responsibility	Priority
2 - Awareness and Education Campaigns				
Raise awareness of on-road cycling to all road users	Adults	<p>Sharing the Road is an initiative aimed at increasing awareness and observance of key behaviours that will lessen the chances of conflict on the road, and reduce the incidence of common casualty crashes involving cyclists. Sharing the Road has been developed by VicRoads and other members of the Victorian Bicycle Advisory Council, including Victoria Police, RACV, Bicycle Victoria, Cycling Promotion Fund and the Retail Cycle Traders Association.</p> <p>This initiative is aimed at educating both cyclists and vehicles on road rules and ways to share the road with other users safely. Local councils are encouraged and invited to undertake local initiatives to provide Share the Road in their communities, and further information can be found at http://www.vicroads.vic.gov.au, selecting "cyclists" and following the prompts, or from local VicRoads Road Safety Coordinators and www.roadsafe.org.au.</p> <p>Schools that are interested in the schemes should be targeted for localised infrastructure improvements, making safer routes.</p>	Council to liaise with VicRoads.	High
TravelSmart	All	<p>TravelSmart is a Department of Transport led initiative that seeks to encourage sustainable travel by school children, employees and the local community. Green Travel Plans are prepared and these identify methods and proposals to encourage more travel to school/ work in the local area on foot, on bicycle, by public transport or by car sharing. New bicycle infrastructure in Boroondara will be important in assisting the implementation of TravelSmart and to promoting 'green' travel.</p> <p>The current TravelSmart program is undertaking travel behaviour surveys at a number of large organisations. It is recommended that the City of Boroondara continues to promote Travel Smart initiatives, in particular at schools.</p>	Council in conjunction with DoT, schools and the local community	High

Program/ Activity	Target Group	Details	Responsibility	Priority
2 - Awareness and Education Campaigns				
TravelSmart	All	It is advised that Council regularly review the Green Travel Plan for staff, and ensure that the initiatives are being successfully implemented; Council should strive to set the standard for others in the community.	Council in conjunction with DoT, schools and the local community	High
Promotion of improved cycling connections to Railway Stations	Regular Public Transport Users	An initiative in the UK that allows more passengers to walk or cycle to railway stations is the Safe Routes to Stations initiative. It is recommended that Council implements a Safe Routes to Stations program in Boroondara to improve integration and intermodality between active modes of travel and train stations. The initiative couples infrastructure improvements with advertising the improved accessibility and safety.	Council, in conjunction with Connex and Station Management Victrack	Medium
Promote an integrated approach to bicycle planning	Engineers/ Planners and other Officers	Education also needs to occur at the planning and engineering level at Council. Any new developments which are proposed should incorporate the needs of cyclists. Policies for cyclists should be incorporated into Council documents at the strategic level as well as guidance at the implementation level. Engineers and planners within the Council need to be briefed of the aims of cycling to ensure the requirements are adequately met and incorporated into daily practices. Intersection and street re-design including bluestone kerbing and traffic calming devices should consider the needs of cyclists. Applications on main roads on the PBN should continue to be referred to VicRoads for assessment. Council needs to work with animal enforcement officers to ensure dog on/off leash requirements are being met by owners on or in close proximity to shared paths, in order to minimise any user conflicts on shared paths. Local Laws Officers at Council to provide ongoing enforcement to ensure that dogs remain under the control of their owners, or on the lead, in designated parks. Consider a 'Dogs-on-leads' campaign/initiative.	Council	Medium

Program/ Activity	Target Group	Details	Responsibility	Priority
Improving Cycling Safety	All Road Users	<p>The 40kmh zones around schools are effective and increase safety for school children, both walking and cycling to school. There is a draft VicRoads toolkit for Councils 'How to have a school zone'.</p> <p>It is suggested that Council complete an audit of the roads surrounding the schools in the municipality, with a view to introducing additional school zones if appropriate.</p>	Council in conjunction with VicRoads	Medium
2 - Awareness and Education Campaigns				
Cycling Training Centres	Young Children (Inexperien ced & Unconfident Learner Cyclists)	<p>Training Centres are a good way of teaching safe cycling.</p> <p>The Kew Traffic School provides an excellent resource promoting safety awareness amongst young children.</p> <p>Signs and traffic signals are appearing dated and it is understood that the Police withdrew their instructor due to lack of manpower.</p> <p>It is recommended that this resource is maintained as a tool for educating young children.</p> <p>An area of training that requires particular emphasis is the use of hook turns by cyclists as a safer means of negotiating difficult intersections.</p>	Council	Low
Driver Awareness	Learner Drivers	<p>Gaining a driving licence in Victoria is currently achieved through obtaining a Car Learner Permit, and then progressing to a Car Licence. A key component of gaining the learner permit involves passing a road law knowledge test, which is based on the Road to Solo Driving handbook.</p> <p>Although the handbook does include elements of cycling safety, a number of community members raised a concern at the limited cycling content present in the test.</p> <p>It is recommended that Council discuss improvements in driver awareness with VicRoads and the means to which this can be reinforced through Council initiatives.</p>	VicRoads	Medium

Program/ Activity	Target Group	Details	Responsibility	Priority
3 - Promote Cycling as a Mode of Transport				
Social Marketing Program	All	<p>The highest education and promotion recommendation is the establishment of a comprehensive, fully-enveloping social marketing program.</p> <p>This recommendation is primarily aimed at encouraging high school and university (Melbourne/Swinburne) students to cycle, however, the recommendation is also inclusive of major local employers and the general community.</p> <p>The recommendation is inclusive of the TravelSmart program involving the promotion of cycling, Green Travel Plans, safety training and awareness programs aligned with trip end facilities and improvements in cycling infrastructure.</p>	Council	High
Webpage – Council webpage as a one stop shop for cycling information	All	<p>The internet offers an opportunity for Council to promote cycling to a wide audience, offers the flexibility to be regularly and easily updated, and can become a valuable resource to the cycling community.</p> <p>The website currently provides a limited amount of information and it is recommended that the City of Boroondara's website be upgraded and expanded to include:</p> <ul style="list-style-type: none"> • Maps illustrating cycle paths and amenities; • Safe cycling guidelines; • Health benefits of cycling; • Rides & Events; • Completed projects and proposals; • Have your say!; • Name & contact details for Council's cycling officer; • Links to Bicycle Victoria, BBUG, etc; • Information relating to cycle lane types and road rules; • Safety tips for cyclists; • Photographs of the trails; • Location & contact details of bicycle shops in the municipality; • Boroondara Bicycle Advisory Committee (BBAC) meeting dates, agendas and minutes; • Hazard reporting link; • Key maps (bicycle crash statistics, PBN, MTN etc); and • TravelSmart map. 	Council	High

Program/ Activity	Target Group	Details	Responsibility	Priority
Encourage Community to Walk and Cycle more	All	Council should consider sponsoring programs to encourage more people to take up walking and cycling, and more sustainable transport modes in general. Council should work with local community groups and organisations to promote cycling as a mode of transport.	Council in conjunction with community health, neighbourhood houses, service and sporting clubs.	High
3 - Promote Cycling as a Mode of Transport				
TravelSmart maps - Wider distribution	All	<p>TravelSmart maps are very useful and are extremely popular with community members. However, it is recommended that they are more widely distributed and should be retrievable from:</p> <ul style="list-style-type: none"> • Bicycle shops in particular, but also newsagents and café's; • Information centres (such as Federation Square); • Public buildings, such as libraries, art galleries, etc; • Neighbouring council officers should hold the plans for all municipalities. <p>Update TravelSmart Maps on regular basis and include drinking fountains and toilet facilities.</p>	Council, in conjunction with other public service buildings, bicycle shops and adjacent municipalities.	High
Council to Lead by Example	All	<p>Council should actively promote cycling as a form of transport within the Council (e.g. as part of a Green Travel Plan).</p> <p>It is important that Council is seen to be leading the way on changing current physical activity levels in Boroondara. This could include providing temporary bicycle parking, where appropriate, at Council-run community events.</p> <p>Furthermore, Council should give consideration to purchasing Council bicycles for use when staff members are attending meetings, as has been implemented by the City of Yarra in conjunction with local bicycle shops.</p>	Council, including Events Coordination Unit.	High

Program/ Activity	Target Group	Details	Responsibility	Priority
Promote Cycling as a Form of Transport to Work	Employees	<p>A higher proportion of cyclists commuting to work in Boroondara could be achieved through implementation of the following recommendations.</p> <ul style="list-style-type: none"> • Workplaces encourage to take part in behavioural change programs • Better and more bicycle parking at workplaces • Encouraging salary sacrificing for bicycles • Better end-of-trip facilities <p>Council to contact major employment workplaces in Boroondara to provide information of all of the above measures, with the intention of 'making it easy' for the workplaces to install new facilities, to educate their employees, and to persuade their employees to commute to work on bicycles.</p> <p>Council should also promote Ride to Work Day including organisation of event, breakfast, entertainment and distribution of promotional and safety products.</p>	Council, in conjunction with significant employers.	Medium
3 Promote Cycling as a Mode of Transport				
Promote Cycling Through Partnerships	All	<p>There is an opportunity to work with partners to promote cycling. Promotion of cycling through:</p> <ul style="list-style-type: none"> • Cycling groups/clubs/shops; • Competition Organisers; • Activity Centres; • Social Cycling Activities; • Come N' Try days; • Engraving of bicycles; • Promotion of cycling to the shops etc; • Promotion within schools/universities; • Public transport providers; and • Sport facilities and parks. 	<ul style="list-style-type: none"> • Council; • Community health; • Heart Foundation; • Neighbourhood Houses; • Sporting Club; • Police – Safety Committee; • Service Clubs; and • Chamber of Commerce. 	Medium
Education Campaign Through the Media	All Road Users	<p>The local media could assist in the education campaign by frequently (perhaps monthly) running Council published articles on cycling awareness or cycle promotion.</p> <p>An increase in publicity of safe cycling will educate more people motorists of safe cycling, and will slowly change attitudes towards cyclists on roads. It is recommended to encourage a cycling segment in regular publications such as Royal Auto (RACV magazine), as well as the Boroondara Bulletin, and other publications. The articles should include tips about how to share the road with cyclists safely, with reminders of road rules.</p>	Council in conjunction with local and regional media.	Medium

Program/ Activity	Target Group	Details	Responsibility	Priority
4 - Promotion of New Facilities				
Promotion of New Cycling Facilities	All	<p>One of the most cost effective ways of promoting cycling is the publicity associated with the provision of new infrastructure. This could include:</p> <ul style="list-style-type: none"> Public launch of facilities, possibly by a Councillor; Press release in local newspapers/ Council publications – such as the Boroondara Bulletin; and Group bicycle rides linking into Council festivals/ activities. <p>In line with this, regular (e.g. yearly) updated flyers detailing bicycle paths and off-road trails could be issued to all residents as a means of promoting the new facilities.</p> <p>Update TravelSmart map regularly and arrange for comprehensive distribution strategies, including Council offices, libraries, recreation centres, Bicycle Victoria, Boroondara Bicycle Users Group, bicycle shops and Information Victoria.</p>	Council in conjunction with local media.	High
5 - End of Trip Facilities				
End of Trip Facilities	All	<p>More secure bicycle parking facilities will encourage more people to cycle such as bicycle racks, showers and lockers.</p> <p>Council should look to encourage installation of improved end of trip facilities at existing trip attractors (supermarkets, sports centres, large employers), as well as strongly promoting the inclusion of cycling facilities in new developments ensuring that as a minimum new developments adhere to the planning scheme requirements.</p> <p>Initiating the discussions between Council and the developers/business operators would be a suitable role for the Council's cycling officer.</p> <p>It is recommended that Council review the existing level of trip end facilities at existing state facilities and public locations, but also encourage private developers, schools and other major employers to provide and improve their trip end facilities.</p> <p>Glenferrie Station has been identified as a station that requires upgraded bicycle parking facilities as a potential Park N' Ride site.</p>	Council in conjunction with developers and business operators.	High

A1 Toolkit

The following guidelines provide an indication as to the design and specification of best practice and state of the art bicycle paths and facilities regionally, nationally and internationally. It is intended that this information reflects the standards to which the Boroondara bicycle network should aim to achieve.

This section is aimed at advising Council and those working on behalf of Council on issues of good practice that should be adopted within the municipality.

A1.1 Paths and Lanes

This section looks at the requirements, performance and suitability of pathway types and lanes, providing a foundation for the quality of cycling network design in Boroondara.

Bicycles are particularly suited for undertaking local trips and cycling can play an important role in promoting a sustainable transport policy. All trips of approximately 5 – 10 km can be considered local, although longer distances are easily achievable of riders of average fitness levels.

Cyclists generally have five basic requirements for safety and efficiency, as follows:

- Space to ride;
- A smooth surface;
- Speed maintenance;
- Connectivity; and
- Information.

The basic bicycle design envelope and clearances provides a summary of cyclist requirements. The 1m wide envelope allows for inexperienced riders 'wobble'. The bicycle envelope is shown in **Figure 13**.

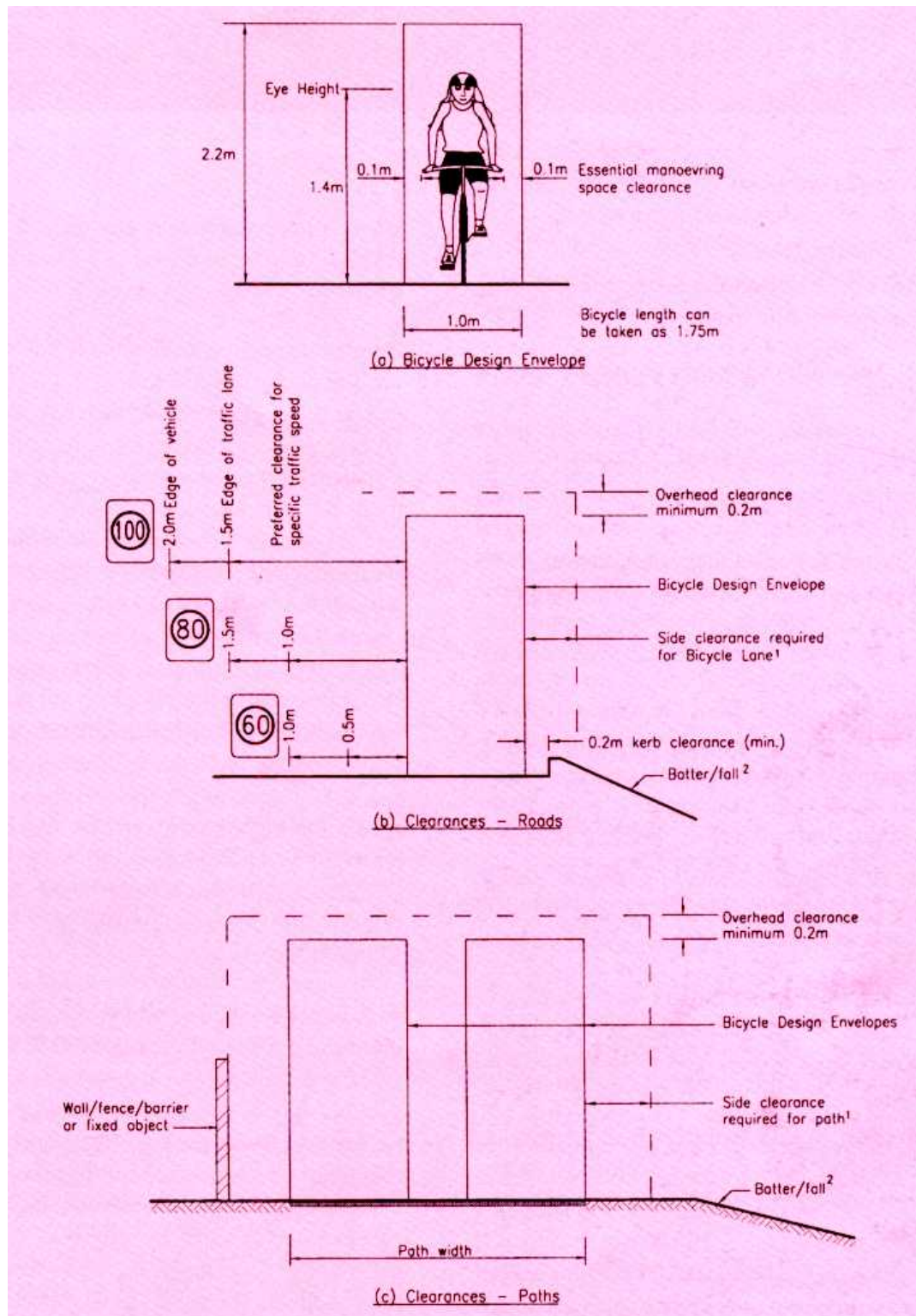


Figure 13 - Bicycle Envelope (AustRoads – Part 14 Bicycles)

When considering the provision of bicycle facilities, as a minimum the bicycle envelope requirements should be adhered to.

Figure 14 has been extracted from UK Sustrans (the UK's leading sustainable transport charity) guidelines. The table reflects the needs of the inexperienced cyclist who will benefit from segregation earlier than the experienced cyclist. The table is used as a first step in the assessment of the need for segregation. The table has been converted into kilometres per hour (kph).

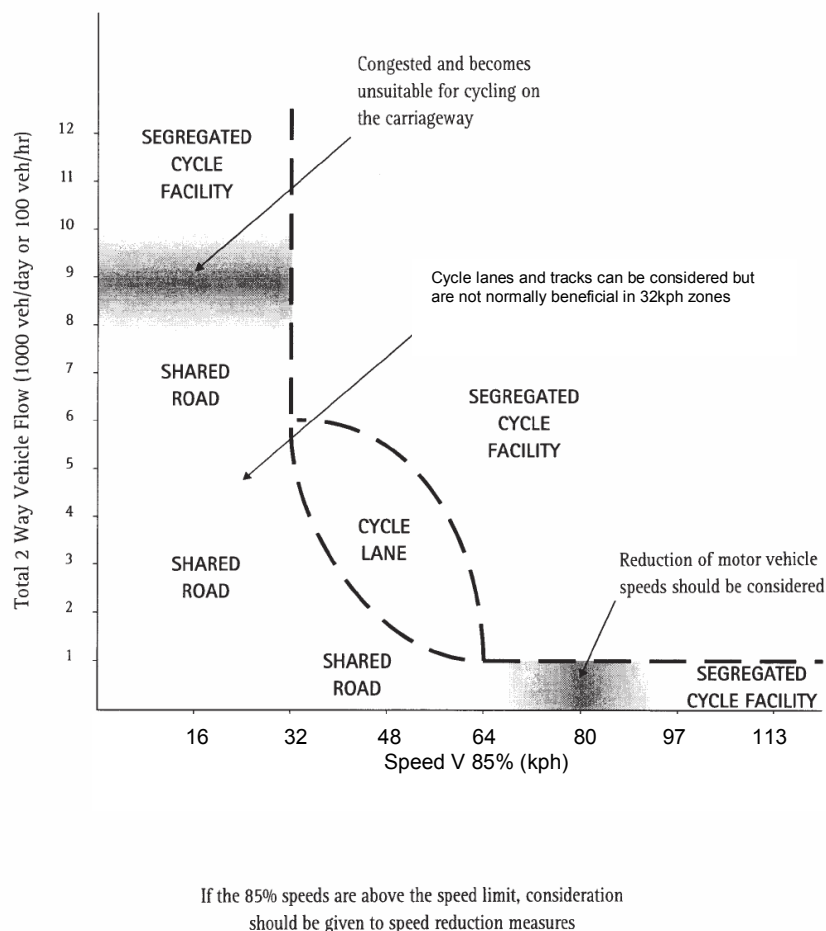


Figure 14- Bicycle Link Specification Criteria

To summarise the design requirements of a route to cater for the inexperienced cyclist:

- On roads with vehicular speeds below 32 kph (This is the 85%ile, only 15% of motorists will exceed this speed), road space can be shared with motorists;
- Roads with traffic speeds 64 -80 kph (85%ile), require segregated cycle facilities or a reduction in traffic speeds;
- Roads with traffic volumes over 9000 vehicles/day require two-way require segregated facilities; and
- Arterial corridors within Boroondara experience high traffic flows, which make corridors inappropriate for use by inexperienced cyclists unless segregation occurs.

A1.1.1 Off-Road Shared paths

The purpose of a shared path is to offer both cyclists and pedestrians a formal pathway, without the safety risks of sharing the roads with motor vehicles. Off-road paths should provide a pleasant and continuous route for cyclists and pedestrians, with minimal road crossings and interruptions.

Off-road shared paths are often used for recreational cycling, given that they regularly do not provide the most direct route between locations, and seldom provide connections with city centres (a popular commuter destination). However, in considering the off-road routes in Boroondara, there are a number of routes that contradict this general statement; such as the Gardiners Creek Trail and the Anniversary Trail that connect to retail centres, workplaces and other significant destinations.

Given their recreational nature, off-road paths are frequently included as part of trails and strategic routes.

The guide in relation to Bicycle Paths recognised by all Victoria is AustRoads - "Guide to Traffic Engineering Practice - Part 14 - Bicycles" (1999).

This document states that the desirable widths of (shared) paths should be as follows:

- Local 2.5m;
- Commuter 3.0m; and
- Recreational 3.5m.

The risk of conflict on shared paths can be reduced through centre line marking, appropriate design width, signage, visibility and maintenance.

VicRoads Cycle Notes No. 3, July 1999, also provides a set of recommendations for the design of shared paths. The document is available from the VicRoads website.

<http://www.vicroads.vic.gov.au/Home/BicyclesPedestrians/DevelopingBicycleNetworks/BicycleFacilityDesignStandards.htm>

The following recommendations are given:

- Minimum path width 2.0m – 4.0m (3.0m desirable);
- Clearance to obstacles: 0.3m absolute minimum to 'smooth' fences/walls;
- Clearance to dangerous obstacles: 0.5m – 1.0m; and
- Minimum vertical clearance: 2.4m from cycling surface/pathway.

The Cycle Notes also detail standards with respect to path curvature for given design speeds, and for visibility requirements for cyclists navigating a path.

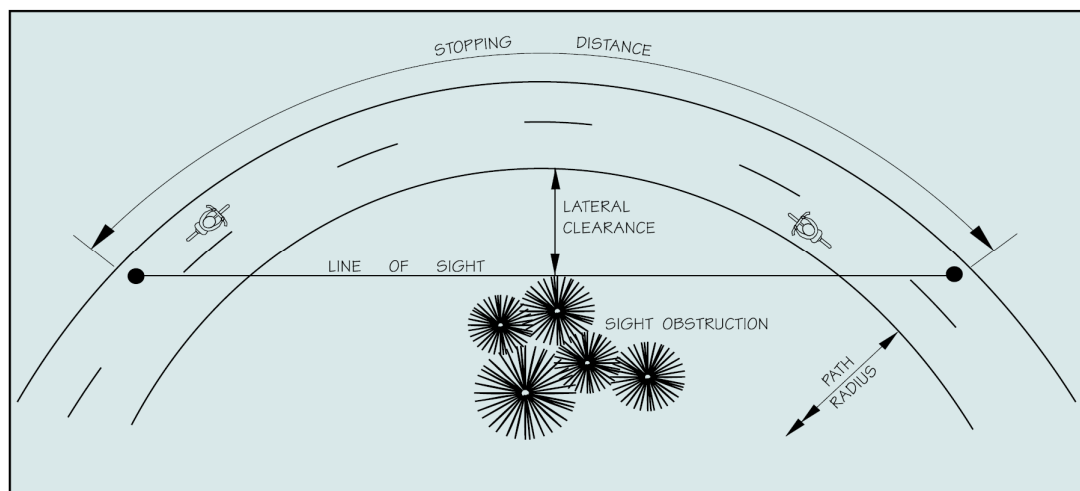


Figure 15 – Extract from VicRoads Cycle Notes No.3

A1.1.2 On Road Lanes

On-road cycle lanes are often introduced to roadways with all or a combination of the following properties:

- Sufficient road width, including space for parked cars if required;
- Significant cycling demand to create a route where drivers will expect and be aware of cyclists;
- Roads are trafficked with above 1,000 vehicles per day, and a shared-carriageway is inappropriate; and
- Roads with few intersections are ideal, to reduce the likelihood of collisions.

On-road lanes are commonly used to connect residential areas with off-road routes, as commuter routes into city centres. Shopping strips are best avoided, unless sufficient distance can be achieved between the cycle lanes and the car doors.

On-road lanes require confidence and experience on behalf of the cyclist, with the majority of cyclists preferring an alternative route given a choice.

AustRoads, "Guide to Traffic Engineering Practice - Part 14 – Bicycles, suggests that



introducing a bicycle lane can increase the safety for cyclists by separating users from motorists. The lanes are commonly defined by a dashed (advisory) or solid white (mandatory) line.

Best practice should operate with no kinks in the lanes and at an adequate width (as defined by AustRoads).

Conflict commonly occurs at left turn junctions but is best avoided by the presence of both bicycle only and vehicle only turning lanes.

A general recommendation of VicRoads is that the AustRoads guidelines are adopted. However, VicRoads also recommend design standards for cycling infrastructure on topics not covered in the Aust roads guide.

Cycle Notes No. 2, May 1999: Bicycle lanes, states that there should be a bicycle pavement logo on both approach and departure sides of a minor intersection, with continuity lane lines across the intersection. The cycle lane width should be between 1.5m-2.0m.

Coloured surfacing is heavily used within many European countries; however, this is not common practice within Australia.

Coloured surfacing can be of value at high conflict locations to reinforce the presence of cyclists particularly at intersections. An example of such surfacing is on St Kilda Road and Fitzroy Street in St Kilda and Swanston Street in Melbourne City.

Coloured surfacing can also be applied to the centre of T-intersections providing cyclists with a clear refuge when turning right for example. See Cycle Notes No. 14.



A1.1.3 On-Road Shared Carriageway

Where roads are lightly trafficked below 1,000 vehicles per day (vpd) and speeds can be maintained below 50 kilometres per hour (kph), UK guidelines indicate that roads can be safely shared between cyclists and motorists.

Australian guidelines (Austroads Part 14 1999) indicate that roads with less than 3,000 vpd can generally accommodate a shared arrangement between cyclists and motorists. Where difference between motorists and cyclists is less than 20 kph full integration can be accommodated. Where speed differences exceed 40 kph segregation is desired.

An opportunity exists to enhance and formalise residential streets environments as a formal on-road shared route.

Measures that can be implemented to foster an on-road shared carriageway include:

- Traffic calming in order that low speeds are maintained;
- Pedestrian/cycling crossing of heavy vehicular routes that intersect with the route;
- Wayfinding continuity markers to improve legibility of route; and
- Marking to carriageway surface and on signs to improve awareness of motorists.



A1.1.4 Wide Kerbside Lanes

A wide shoulder lane is an on-road bicycle lane that is wide enough to allow a cyclist and overtaking vehicle to occupy the same lane. Many of the lanes are marked with bicycle symbols near to the kerb, although the lane does not always offer continuity along a route, and intermittent lane markings are common.

Wide kerbside lanes are often busy thoroughfares, operating with no-parking 'Clearways' during the peak periods.

As with regular on-road cycle lanes, the wide kerbside lanes are generally used by confident cyclists, although the additional width can reduce the stress levels of other cyclists using the cycle lanes.

The paper 'Marking Melbourne's Arterial Roads to Assist Cyclists', Malcolm Daff and Tony Barton, considers a range of line marking techniques introduced to Melbourne's arterial roads. This study included an evaluation of the impact of wide kerbside road lane markings and lane width, considering the impact to perceived (riding stress levels) and actual (vehicles overtaking clearance distance) safety to cyclists.

The study concluded that the width of the kerbside lane had a 'significant' impact on the clearance given by vehicles when overtaking cyclists, and stated that a wide kerbside lane width increase from 3.5m to 4.5m can have a 0.5m increase in the clearance width. However, the inclusion of a bicycle symbol did not incur a notable impact.

AustRoads, "Guide to Traffic Engineering Practice - Part 14 – Bicycles, suggests the following acceptable parameters for a wide kerbside lane are as follows:

- 3.7m absolute minimum width;
- 4.0m desirable minimum width
- 4.2m desirable width (60kph road); and
- 4.5m desirable width (80kph road).



VicRoads Cycle Notes No. 13, July 2004 provides guidance as to the design of wide kerbside lanes. The cycle notes recommend the lane widths suggested by AustRoads are adopted for wide kerbside lanes, and highlights the importance of appropriate signage and lane marking:

- Lane markings to be provided 15m before and after each intersecting street;
- Lane markings to be at intervals not exceeding 200 metres;
- Additional markings required around curves, on crests and opposite 'T' intersections; and
- No bicycle lane signage should be installed on wide kerbside lanes, as the lanes are a shared surface, not a separate bicycle facility.

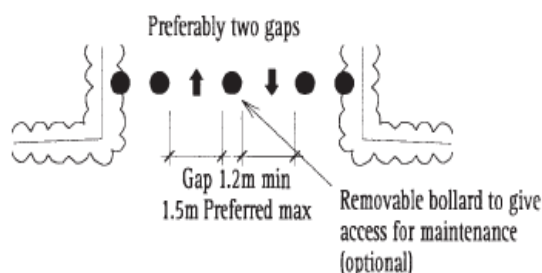
A1.2 Access Barriers

The design of an access barrier leading onto an off-road pathway should strive to provide easy access to cyclists and wheelchairs, whilst deterring cars and motorcycles from entering the path. The issue of what barriers to provide, with particular reference to moveable barriers, was an issue raised at the stakeholder meeting.

Sustrans (UK) recommends that the impact of an access barrier be minimised, considering that heavy and regular use of the access point by cyclists and pedestrians is an effective deterrent of unauthorised use.

Sustrans identifies three types of access barrier; bollards, chicane and barrier.

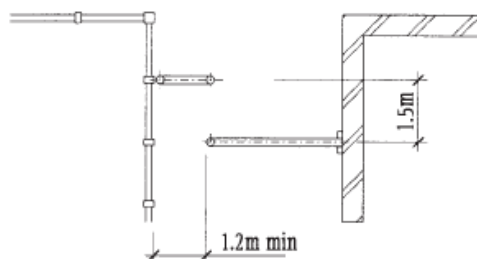
The Bollards Plan, as shown on **Figure 16**, was highlighted by Sustrans as the preferred option, providing that sufficient space is available allowing the plan to be implemented. The



plan offers easy access for cyclists and wheelchairs, with a removal central bollard allowing vehicular access for maintenance. This option is beneficial to two way cyclists given the lane separation and cyclists are not required to dismount. However, the plan fails to prevent motorbikes from entering through the access, and the central bollard can be an obstacle unless adequately visible.

Figure 16- Bollards Plan

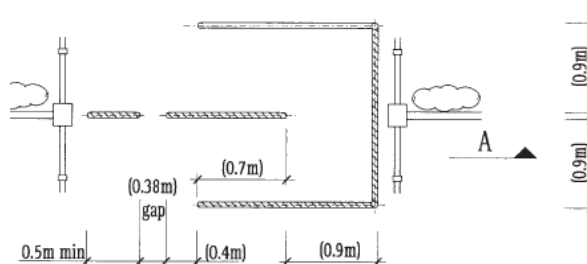
The Chicane Plan, as shown on **Figure 17**, is able to prevent all motor vehicles entering through the access point, but does become a hindrance to bicycle flows.



Cyclists are required to dismount, severely reduce in speed, and should give way to oncoming cyclists. Maintenance access is also difficult, and wheelchair access is limited.

Figure 17- Chicane Plan

The Barrier (with wheelchair bypass) Plan, as shown on **Figure 18**, offers a similar level of access to cyclists to the chicane plan, but also provides an additional gap to improve



wheelchair access. This plan prevents all motor vehicles from entering through the access point, which renders maintenance access difficult.

As for the chicane plan, the access point is a hindrance to cycling continuity and requires cyclists to slow down, or even dismount and give way to oncoming traffic.

Figure 18- Barrier (with wheelchair bypass) Plan

The national Austroads Guidelines - Part 14 Bicycles does not recommend the use of bollards in the centre of paths as they are not safe for cyclists. The guidelines state that a safe access barrier should be tall, wide, painted in a contrasting colour, wrapped in reflective tape (*Reflective tape shall be to AS 1743-2001, illuminated correctly, leave 1.4m clearance minimum*), be preceded by tactile marking and a painted line. Austroads recommends that bollards should not be used at intersections.

The VicRoads guidelines (Cyclenotes 16 and 17) provide recommended best practices for provision of design treatments for on-road and off-road paths. The on-road guidance suggests a variety of road crossing types, and lists conditions for inclusion of 'stop' and 'give way' signage. Given that unclear signage is susceptible to become a hazard to cyclists, the Cyclenotes advise that they should only be used at locations where the intersection is not clear, or when a safety risk is present for cyclists.

The off-road pathway VicRoads recommendations are in Cyclenotes 17, including guidelines for the use of terminal treatments such as bollards and barriers. The purpose of terminal treatments is clearly subject to two reasons; to inform cyclists that a road is approaching, or to prevent motorists from accessing the off-road paths. It is advised that measures to prevent unauthorised vehicular off-road access should only be implemented following the identification of a recognised, repeated problem. The Cyclenotes recommend the following:

- Opening widths for terminal treatments to be no more than 1.6 metres if used for vehicular access prevention;
- Opening widths for terminal treatments to be no more than 1.4 metres if used to inform cyclists of the approaching road;
- Staggered treatments are recommended if warning cyclists to slow down before reaching the road; and
- Bollards and U'-Rails (for paths >4.0metres in width) are recommended if the access barrier intends to prevent vehicle access.

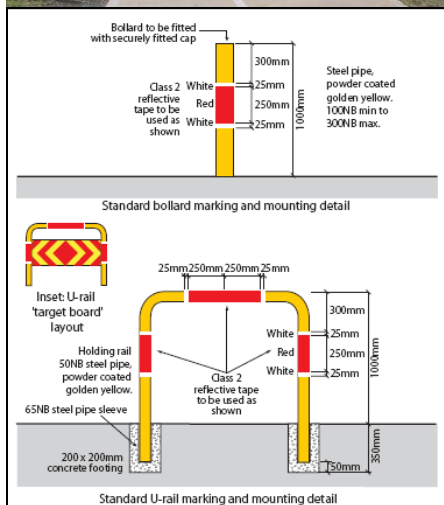
The VicRoads preferred treatments are illustrated on **Figure 19** as well as some other examples in **Figure 20**.



Example of preferred 'U'-Rail and target board treatment to prevent motor vehicle access.



Example of preferred bollard treatment to prevent motor vehicle access.



Preferred bollard and 'U'-rail treatment.

Figure 19- Preferred VicRoads Access Barrier Treatments



Not visible, dangerous.

Line marking does not guide cyclists away from bollard.



Good spacing and highly visible. Good use of line markings.

Bollard positions result in a bottleneck.



Removable bollards, offering good visibility.

Height may interfere with handlebars and become a safety issue.

Figure 20- Examples of Access Barriers

It is recommended that the following guidelines are followed for the installation of bollards:

- Place bollards in the centre of lanes to allow two way cycle flows;
- Introduce surface/line markings on approach to guide cyclists around the bollards;
- High visibility bollards – including reflective materials;
- Limit height of bollard to reduce risk of interference with bicycle handlebars; and
- Employ removable bollards when vehicular access is required.

A1.3 Lighting

A1.3.1 Public Lighting

Bicycle paths must reveal necessary visual information, such as the road itself, the course of the road ahead, kerbs, footpaths, property lines, road furniture and surface imperfections, together with the path.

According to Australian Standards (AS1158.1.1 2005 Lighting for Roads and Public Spaces – Part 3.1: Pedestrian Area (Category V) Lighting Performance and Design Requirements), bicycle paths with mixed vehicle and pedestrian traffic should comply with lighting sub-category V4 or V5 depending on the traffic volume. This lighting sub-category is the same that is applied to the majority of minor roads.

Photovoltaic lighting presents a flexible opportunity to locate new lighting at locations where the provision of a power supply is costly. The picture to the right illustrates a PECAN solar street light.



A1.3.2 Personal Lighting

The use of personal lighting is an important issue that should be addressed through education and awareness programs.

Light surveys undertaken by Bicycle Victoria at seven locations within the Melbourne CBD in June 2007 indicated that riders entering Boroondara had the highest level of compliance in the survey with 92% of cyclists having adequate lights. This is well above the average of 72% recorded in the survey.

A1.4 Wayfinding Signage

Poor wayfinding signage was both observed during the site visits and raised during the consultation process. It was suggested that the existing signage was lacking in continuity, legibility and consistency, particularly at intersections and at entry points to the shared pathways.

VicRoads Cyclenotes 11 provides recommendations relating to the type, location and design of directional signage for off-road paths. Typically, the information should aim to direct cyclists to the off-road network and surrounding road network, inform cyclists as to the pathway that they are riding on, provide distances for key destinations at regular intervals, and provide cyclists with the names of intersecting paths and roads. It is advised that signage be placed in the following locations:

- At intersections with other paths;
- Intersections with roads;
- At bridges and underpasses (i.e. Toorak Road, Tooronga Road, Burke Road etc); and
- Intersections with access paths.

However, reminder signage should be placed routinely along mid-block locations of off-road paths to reassure cyclists and assist their route choices.

A1.4.1 Naming Convention

It is important that cycle paths are given names or numbers along the entire length of the route for ease of navigation. The numbering of bicycle routes provides cyclists with an easy method to interpret a geographical reference point. A bicycle route may run across a number of municipalities and will need to be co-ordinated with all relevant Councils to ensure continuity and consistency.

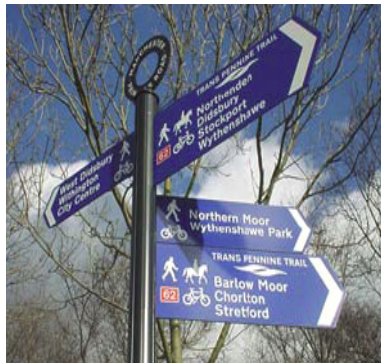
VicRoads Cyclenotes 11 details the process for naming a shared path. Information can be obtained from www.vicnames.vic.gov.au.

Figure 21 on the following page provides some examples of good practice and innovative initiatives that could be implemented in Boroondara.



Integrated Information Board illustrating local amenities and public transport

Used in parks and at pathway intersections.



Legibility of route and directions to amenities and public transport

Used in parks and at pathway intersections.



Example of self adhesive continuity marker

Use along a route to assist wayfinding



Advance Directional Signs Integration with road signs.

Use along a route to assist wayfinding

Figure 21- Examples of Signage (Sustrans: <http://www.sustrans.org.uk/>)

The sign examples presented on **Figure 21** are all taken from various locations within the UK.

A1.4.2 Surface Markings

The application of self adhesive markers can improve route legibility, particularly through local streets. The markers also offer the opportunity to provide directions to nearby railway stations, or to provide a temporary sign where more permanent signs are vandalised. Self adhesive markers need to be manufactured with suitable materials that don't easily degrade and are not easily removed.

Markers that improve the legibility of a route are not restricted to signs or posts but can also be marked on path surfaces.



Figure 22- Wayfinding Surface Markings

It is recommended to install these surface markings at intersections on off-road trails in Boroondara, and as intermittent route reminder markings at mid-block locations.

A1.5 End of Trip Facilities

Whilst the provision of a bicycle network is instrumental in encouraging more cycling trips, this needs to be supported with adequate end of trip facilities for cyclists at key destination points.

Trip end facilities include the following:

- Bicycle parking – provision and location;
- Showers – particularly at workplaces;
- Lockers/ safe storage;
- Toilets; and
- Water fountains – en-route, often in parks.

The provision of bicycle facilities for new developments is now prescribed under Clause 52.34 of the planning scheme, and includes parking and associated shower and change facilities. Part 3 of the Australian Standard for Bicycle Parking facilities (AS2890.3 – 1993) prescribes requirements for the layout, design and security of bicycle parking facilities.

A1.5.1 Bicycle Parking

The lack of secure parking facilities for bicycles is a barrier to potential cyclists and should be addressed at all key facilities and amenities. Particular attention should be given to those located adjacent to bicycle routes. It is recommended that as a minimum, the following amenities have secure bicycle parking facilities:

- Schools;
- Stations;
- Recreational opportunities;
- Community facilities; and
- Retail outlets.

The VicRoads website details recommendations for cycling parking provision, listing the location and recommended type of bicycle parking facilities; as presented below on **Figure 23** on the following page.









Type of location	Recommended Parking Facility	
<ul style="list-style-type: none"> Strip shopping centres Business districts 	<ul style="list-style-type: none"> Individual and small clusters of bicycle parking rails located 20 to 30 metres apart. 	
<ul style="list-style-type: none"> Shopping complexes Swimming pools Libraries Markets 	<ul style="list-style-type: none"> Clusters of bicycle parking rails at main entrances. 	
<ul style="list-style-type: none"> Work places Primary and Secondary Schools 	<ul style="list-style-type: none"> Groups of bicycle parking rails within an enclosure. 	
<ul style="list-style-type: none"> Universities TAFE colleges 	<ul style="list-style-type: none"> Clusters of bicycle parking rails at main entrances and throughout the campus. Groups of bicycle parking rails within centrally located enclosures. 	 
<ul style="list-style-type: none"> Railway stations Public transport terminals 	<ul style="list-style-type: none"> Groups of bicycle parking rails within an enclosure. Individual bicycle lockers. 	 
<ul style="list-style-type: none"> Apartment buildings Residential complexes University residences 	<ul style="list-style-type: none"> A group of bicycle parking rails in an area of restricted access such as a car park or within an enclosure. Individual bicycle lockers. 	 

Figure 23 - VicRoads Cycle Parking Recommendations

VicRoads have produced the 'Bicycle Parking Handbook' – a set of parking guidelines that will help employers and building operators to provide secure and convenient cycling. The handbook can be downloaded from

<http://www.vicroads.vic.gov.au/Home/BicyclesPedestrians/DevelopingBicycleNetworks/ParkingAndEndOfTripFacilities.htm>.

It is recommended that the utilisation of bicycle parking is monitored, potentially identifying any growth in cycling, vandalism and the need to expand facilities.

At schools and universities bicycle parking facilities should be in a prominent location which allows casual surveillance, and under a shelter. Open or see through ends of the stands allows visibility of bicycles from all sides.



Figure 24- Examples of Bicycle Parking

Public consultation identified that parking facilities at stations often lacked shelters and were inconveniently located at the end of platforms, which were considered to be areas with minimum surveillance. A preference was stated for bicycle parking facilities to be located in the railway station entrance, which is considered to be more easily accessible and secure since casual surveillance is possible.

A1.5.2 Bicycle Lockers at Stations

Over 500 new bicycle lockers have been implemented at suburban railway stations by Connex and the State Government, as part of the two year Cycle Connect initiative that ended in 2005-06. The objective is to encourage use of public transport and in particular multi-modal trips by providing bicycle path infrastructure.

The following table is an extract from the Connex website, detailing the railway stations both within Boroondara and the adjacent municipalities with their respective bicycle locker facilities.

Table 11- Summary of the Existing Bicycle Locker Facilities at Appropriate Stations

Station	Staffed Station?	Existing Lockers	New Lockers	If lockers are located at an unstaffed station, book at -
Ashburton	Y	6	-	
Auburn	N	6	-	Camberwell
Camberwell	Y	6	-	
East Malvern	Y	12	-	
Glen Iris	N	6	-	Glen Waverley
Glen Waverley	Y	12	-	
Surrey Hills	Y	12	-	
Tooronga	N	8	-	Glen Waverley
Glenferrie	Y	8	-	
Mount Waverley	Y	8	8	
Box Hill	Y	10	-	

The train stations within Boroondara that do not currently house any lockers include Alamein, Burwood, Canterbury, East Camberwell, Hartwell, Hawthorn and Willison.

Lockers should be provided at all stations, in particular at stations along the Alamein railway line which is closely aligned with the Anniversary Trail. East Camberwell Station also links well with the Anniversary Trail.